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ABSTRACT

The purpose of this study was to determine the impact of undergraduate degree programs in nursing on students from the University of Portland (UP) and the University of San Francisco (USF). Data were collected via structured group interviews and a double Q-sort administered twice at the end of each year of the program. The study was designed to answer the following questions: Is the new curriculum at USF achieving its objectives? Does exposure to the new curriculum change students? How do graduates of the new program at USFcompare with graduates of the old program? How do the graduates of USF compare with the graduates of UP? What are the reactions to the new programs at these institutions? Recommendations made on the basis of the study findings include: a) faculty should demonstrate greater recognition and deeper concern for students as individuals, adults, and potential professionals; b) the substance of professional learning experiences should be increased; c) efforts should be made to individualize learning experiences; d) more in-depth professional experiences should be planned for the final year of the programs; e) team teaching should be readjusted or other strategies considered for the program; f) learning experiences in terms of family content should be reassessed; and g) faculty should reconsider their roles as professional nurse models and educators and adjust those roles within the demands of program objectives. (Author/HMD)

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TEACH ME, AND I WILL BE SILENT

Joan L. Green

and

James C. Stone

A report of the five-year project, "Development and Use of Tools for Curriculum Evaluation," supported by Grant No. D 10 NU 00235-05, National Institutes of Health, Nurse Project Training Grants, U.S.P.H.S., 1968-1973.

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PREFACE

This investigation began in 1968 when two researchers came together in a common belief that students' perceptions of their collegiate experience constituted a solid base on which to formulate a research design for evaluating a four-year baccalaureate degree program. Thus, this report on the impact of the curriculums in two universities is replete with data from students regarding their reactions to their academic and professional education programs--what was taught and how it was taught--and their retrospective recommendations regarding its strengths and weaknesses.

The investigation ended in the Summer of 1973 with the authors' belief in students and their opinions intact and with this belief amply buttressed by data which speaks for itself.

Many individuals cooperated in this investigation. The project could never have been undertaken without the cheerful cooperation, interest, generosity, and enthusiasm of the faculty, students, and graduates at U.S.F. Their patience during all the data collection periods over the four years was remarkable.

Neither could the project have been undertaken without the interest and cooperation of the students and faculty at the University of Portland School of Nursing. Their participation was coordinated by Vernon J. Damm, who found time during his own curriculum project to assist us with ours.

Special thanks go to Gail De Wath, whose standards of excellence were beyond comparison in the preparation of the manuscript and in the hundreds

of other activities associated with being a research project secretary.

Those who really made the project what it is were the consultants and the research associates, a research team exemplar: Stephen B. Lawton of the Ontario Institute for Studies in Education, who developed the design for the statistical analysis; Paul A. Heist, a Professor of Higher Education at the University of California, Berkeley, who assisted us in the use of the OPI and answered many questions concerning the characteristics of college students; and Douglas A. Penfield, Assistant Professor, Graduate School of Education at Rutgers University, who performed much of the interim data analysis, read the final chapters on the quantitative findings, and broke down our stereotypes about statisticians! A very special thank you to William J. Schwarz, University of California, Berkeley, whose contributions to the project are untold. He assisted us in the development of the Q-sort items and demographic questionnaire and performed yeoman hours of programming and cluster and other statistical analyses. Many of the pages which follow reflect Bill's contributions.

There was much support for this long-range project from the administration at U.S.F. As Vice-President for Academic Affairs, Paul J. Harney, S.J., now deceased, released the project director from teaching responsibilities so as to work full-time on the grant. His successor, Edmond J. Smyth, S.J., has continued to support both the CEP and the School of Nursing in a hundred and one different ways. Sister M. Geraldine McDonnell, S.M., Dean, School of Nursing, provided continuous encouragement and moral support.

Finally, there is one last person without whom the project would never have been undertaken. Her wisdom, her vision, and her overwhelming confidence were motivating, stimulating, and unshaken, even though the project got bigger

than she ever dreamed it would. To her, Sister M. Beata Bauman, S.M., Dean Emeritus of the School of Nursing, this effort is gratefully dedicated.

Joan L. Green

James C. Stone

San Francisco, August, 1973

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PROLOGUE

For education is change

sometimes subtle, sometimes cataclysmic
in the consciousness of man
and thus in the institutions man has evolved to define and extend himself.

Education doesn't happen through didactic teaching
through rote learning;
education is personal and it is participatory,
it has to do with becoming alive, aware, excited to learn
to take action
to improve the world
one's profession
And one's self.

But the world is large
history long
the amount of academic and professional knowledge infinite.

Socially responsible, self-disciplined understanding and love are needed
to change the world
our profession
And ourselves.

We begin with respect
for ourselves
for each other
for our professional colleagues
for all that can be learned.

And this learning begins with students saying
"teach me, and I will be silent."[1]

Adapted from the frontispiece
of Graduate Program Bulletin,
Goddard College, Plainfield,
Vermont.

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[1]From the Book of Job, Chapter VI, Verse 24.

PART I

INTRODUCTION

CHAPTER 1

HISTORICAL BACKGROUND

Revision of the nursing curriculum at the University of San Francisco was initiated in 1964. The decision to revise it was the result of many factors. Chief among them was the growth of the school. In 1954 there were 21 students and two faculty members. When this first class graduated in 1958, the student body had increased to 102 and was taught by 12 faculty members. Within another four-year period, enrollment had reached 155 and the faculty numbered 19. A new curriculum in nursing was implemented in 1966-67. At that time 265 students were enrolled in the nursing major and taught by a faculty of 25. The enrollment in 1968-69 was 350 students with a professional nurse faculty of 34. At the start of the Curriculum Evaluation Project (CEP) in 1968, the School of Nursing had completed a planned, sequential, expansion program.

Since the enlarged student body increased the demand for off-campus clinical facilities, faculty members found themselves competing with other schools and programs in the San Francisco Bay Area for laboratory facilities of the traditional type. As a result, it was necessary to create different types of laboratories to meet program objectives.

Early Attempts to Revise the U.S.F. Curriculum

Between 1958 and 1960, a special study was initiated to identify and evaluate the degree of integration of the essential concepts included in the

nursing curriculum. Sixty-five concepts, grouped into ten broad categories, were identified as essential to the baccalaureate program in nursing. It was assumed that each of these concepts would be taught to the point of mastery at some point within the curriculum. Methods and instruments were developed and applied to measure the degree of integration of each of the concepts included in the program. The findings identified the weak areas of the curriculum which the faculty then decided to strengthen. In 1964 the study of essential concepts was replicated. Courses again were reviewed for the extent to which these concepts had been integrated. To the chagrin of the faculty who had been present at the time of the first study, some of the weaker concepts identified in the earlier study continued to be weak, and some others which had been thought to be integrated to the point of mastery had declined. The faculty began to question their approach--there were obvious gaps and duplications in what was considered to be essential content.

Simultaneous with this self-discovery was the 1964 accreditation visit by the National League for Nursing. They made specific recommendations regarding the large number of small unit courses in the professional curriculum and the fragmentation of content. Again the faculty set about redefining the program. The process was given additional impetus from a project sponsored by the Western Interstate Commission of Higher Education to identify essential content in baccaluareate programs in nursing.[1] At this time there were 15 nursing courses in the program ranging in value

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[1]Charlotte Coe, et al., One Approach to the Identification of Essential Content in Baccaluareate Programs in Nursing, Report to the Western Interstate Commission for Higher Education (Boulder, Colorado: University East Campus, February, 1967).

from two to eight semester units. Three theory courses were taught in the freshman year. The courses in the sophomore, junior, and senior years were combinations of theory and laboratory experiences. Some of these 15 courses were taught by one faculty member, others by groups of three or four, each prepared in the same general area of nursing practice.

Initially the faculty sought to bring about a rearrangement of the supporting liberal arts and science courses required for the nursing major. In order to provide a better science foundation upon which to build the major, the required science courses were placed in the freshman year, and two of the three freshman nursing courses were moved to the sophomore year. The third freshman nursing course was dropped.

Essential to this change was a major decision by the faculty to continue to introduce nursing courses in the lower division, though the general trend in baccalaureate nursing programs was to place courses in the major at the upper division level. The U.S.F. faculty believed that the students would be more liberally educated if the supporting courses were spread throughout the four years of the students' program rather than concentrated in the lower division.

Next came another major decision to implement the concept of progressing from simple to complex. The faculty concluded that the simple to complex concept could be implemented more effectively if all aspects of professional nursing were introduced at the sophomore level. Students would be able to test their interest in nursing sooner, transferring to other majors, if necessary, with less penalty. Also, students would be able to maintain an identity with the total university throughout the entire program by taking liberal arts courses throughout the four-year program.

This decision to develop lower division content in nursing was supported by an earlier effort of the faculty in connection with the Conference of Catholic Schools of Nursing which had developed a definition of lower and upper division content in nursing.

The stated purpose of objectives of the nursing program were reviewed and used as a basis for the development of a formal statement of philosophy (Appendix A). This statement of philosophy was the point of departure for the development of the revised curriculum.

Curriculum Levels

The Curriculum Committee,[1] which was charged with the major responsibility for continued curriculum development, guided the activities of the faculty. Essential and fringe content were identified by examining each of the 14 courses then taught at the three levels of the curriculum. This content was sorted according to levels of complexity and labeled as appropriate for either sophomore, junior, or senior year. Groups were organized among the faculty according to levels of interest, sophomore, junior, or senior. Each of these groups attempted to arrange and synthesize the content into a meaningful whole appropriate for that particular year. Consultant services were obtained to assist in the development of a framework around which the

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[1]The Curriculum Committee is a standing committee of the Faculty Association of the School of Nursing. The objectives are: 1) to provide for ongoing study and evaluation of the curriculum in the light of changing needs of students, overall University changes, and current professional, educational, and social trends; 2) to work constructively toward needed curriculum revisions as indicated by changing patterns in nursing practice and health needs of people; and 3) to provide for periodic analysis and reappraisal of criteria for evaluation of students' progress toward competence in nursing. Membership consists of representatives from each team and specialty area, who are elected, appointed, or ex officio by virtue of position, as defined by the Bylaws, Faculty Association of the University of San Francisco School of Nursing, Article VII, Section 9.

content was organized at each level. Specific objectives for each level were developed. These were defined in behavioral terms for each semester for each level (sophomore, junior, and senior). These objectives established the limits for depth and complexity at each level and reflected both theory and laboratory experiences. With these objectives, the essential content at each level was then rearranged. The sophomore year was defined as the foundation period during which the student would be introduced to all areas of nursing practice as well as to beginning levels of content in each of the concepts to be integrated throughout the curriculum. These concepts were to be pursued in greater depth at the junior and senior years; thus, the design for the three years of the new curriculum had been formulated, though the essential content had not been clarified for the upper division.

By the time this new curriculum was implemented in 1966, the sophomore year had been completely planned and accepted by the faculty. Laboratory experiences had been chosen which would best meet the objectives for that level. Representatives of the major areas of nursing practice taught the two courses and participated as team members in planning and evaluation. Faculty members at the junior and senior levels then had one to two years in which to anticipate implementation of the new curriculum at their levels.

The Curriculum Committee worked with the faculty to identify criteria for evaluation of student learning and to organize the essential content. The Committee assisted in the articulation of content from one level to the next and attempted to meet the orientation needs of new faculty added each year as part of the expansion program occurring simultaneously with the implementation of the new curriculum.

The Conceptual Framework of the Integrated Curriculum

Seven nursing courses emerged from the reorganization, totaling 60 semester units (Appendix B). A three-unit theory course on the science of nursing was taught each semester at the three levels. A second course, incorporating theory and laboratory experiences, was taught concurrently each semester with the science course. The unit value for this course varied from five to eight semester hours. During the senior year a two-unit seminar course also was offered each semester.

The seven courses were planned on a sequential basis, progressing from simple to complex. The framework unifying the organization of the content was based on concepts derived from the statement of philosophy. They included problem-solving, family-centered nursing, individualized approaches to student learning, and professional roles and responsibilities. These key ideas formed the rationale for the adoption of the "family" as a unifying theme, the "nursing problem" as a method of teaching, and concepts of health and illness as the basic approach to articulation of content.

There were three core threads which provided the theoretical structure for the integrated curriculum: 1) individual, family, and community health, 2) problem-solving, and 3) professional and leadership roles. Specific objectives related to each core thread were identified for each level of the curriculum so that continuity could be maintained. The core threads were visualized as crucial ideas which served as the focus for organization of the content at each level and (hopefully) enabled the student to integrate her learnings.

The faculty planning the curriculum had two ideas about integration:

1) it is the correlation of knowledge from various disciplines around the ideas which serve as core:

2) it can be any concept, problem, or device by which two or more ideas are related.

Problem-solving was selected as the method of teaching used to promote integration. Through the selection of problems, arranged from simple to complex, a sequential development of the key concepts was maintained.

The faculty, therefore, used problem-solving in two ways: as process and as content. As process, it was a method of teaching or a way to arrive at appropriate nursing care (which substantiates the objective that the curriculum was preparing nurses for the future as well as for the present). As content, it was the rationale for the inclusion of facts which served as the data necessary for problem-solving as a process.

The key concepts around which the content was organized were called integrative threads. These were introduced in the nursing science course in the sophomore year and pursued in greater depth throughout the upper division. The integrative threads and related sub-concepts are:

Behavioral Adaptation

Crisis
Stress
Anxiety
Adjustment and adaptation to illness role theory
Loss (sensory deprivation, body image, dying, death, and bereavement)
Immobilization (controlled activity and isolation stress)
Self-concept
Dependency
Independency
Interdependency

Problem-Solving

Epidemiology
Nursing diagnosis
Priorities
Evaluation

Observation
Decision-making and intervention

Communication

Relationships
Group process
Therapeutic communication
Impaired communication

Professional and Leadership Role

Legal aspects
Homeostasis
Human ecology

Restoration of Health

Individual, Family, and Community Health

Thus, essential content was identified for the three levels of the curriculum, related to one or more of the three core threads, and organized in a manner to facilitate integration. In sum, the conceptual framework for the new curriculum was developed and implemented.

Sequence of Problems

The new curriculum now began with the problems of maintaining health and wellness in the individual and proceeded to the maintenance and restoration of health and wellness of individuals, families, and communities. The problems selected for study represented a gamut of needs of the individual and the family, including biological (physiological), psychological, cultural (including spiritual), socio-economic, and ecological. The faculty identified and selected problems that were realistic with current and emerging professional practice. The concepts taught in the theory courses were used as guides to the solution of problems presented in laboratory courses. In each succeeding year, more complex problems were introduced, involving more interrelationships, more community agencies, and the continued use of the family

as the receiver of nursing services.

Other factors considered in the selection of essential content were 1) expectations of the consumers of nursing services, 2) influences of major health problems on society, 3) values and experiences of a liberal education, and 4) competencies of the baccalaureate nurse as problem-solver, decision-maker, leader, and professional practitioner.

Sophomore Year

The focus in the sophomore year was on one-to-one nurse-individual/family relationships; peer group process relationships, promotion, and maintenance of wellness in the child and adult; and introduction to the problems associated with aging and those related to the mildly ill, particularly recognition and adjustment to the sick role. The laboratory settings included the classroom, conference, and seminar; senior citizen centers, institutions for well-aged, private homes, outpatient (including prenatal) clinics, nursery schools, multiphasic screening centers, doctors' offices, long-term medical facilities, and general hospitals.

Junior Year

During the junior year, the focus was on the childbearing and child-rearing family; illness of infants, children, and adults; and the impact of illness on the family structure. Settings for laboratory experience included general hospitals, children's hospitals, doctors' offices, agencies dealing with disruptive families, private homes, and outpatient clinics.

Senior Year

At the senior level, the focus shifted to patients with complex physical and/or behavioral problems, families with multiple health needs

in the community, and those requiring extended care in the home, nursing homes, or other agencies in the community. Settings for laboratory experiences included intensive care units, medical and surgical units in the general hospital, psychiatric facilities in general and state hospitals, and community health agencies.

Thus, the faculty sought to achieve the goals stated in the School of Nursing philosophy through the pursuit of specific objectives incorporating concepts of family-community health, analytical thinking and judgment, and professional leadership.

Team Teaching

As plans for the integrated curriculum developed, team teaching emerged as a way to implement program objectives. Nine to twelve faculty members, representing all specialty areas of nursing practice, composed the team at each level. The number of faculty on a team was based on maintaining a desired ratio of one instructor to eight students in each laboratory area. The focus and emphasis of the curriculum at each level were the basis for determining the number of faculty representing any one specialty area.

The activities of each team were coordinated by a team member. All members of the team, including the coordinator, carried a full-time teaching load equivalent to the twelve-unit load of University faculty.

The lectures and class presentations of theory courses were planned, coordinated, taught, and evaluated by the entire team. Small sub-groups were formed to organize the units of theory. Test committees were organized to put together the examination questions submitted by individual team members at the end of class presentations.

Each team member also was responsible for a unique laboratory setting

to which the student was assigned either on a block rotation basis or at intervals for planned sequential learnings. The faculty member stayed in the same laboratory setting, and the students came to her. It was not expected that every student would gain experience in every setting or with every instructor.

Group Process

Because of the large theory classes, it was essential that the student have some kind of identity with at least one faculty member as well as with a peer group. Discussion groups were established which met two hours each week as part of the regularly scheduled laboratory time. One faculty member and eight students composed a section. The sections met for the purpose of 1) comparing and contrasting learning experiences in the laboratory, 2) applying theory learned in nursing science courses to clinical experiences, and 3) learning from each other. Much of the content related to group process also was handled in these discussions. In fact, the group discussions served as the laboratory experience for the application of the theory of group process. The sections remained the same for both semesters of each year. The section arrangement was used to facilitate University registration. It also was the nucleus for the faculty advising program and for the evaluation of student progress. Not every student in a given group necessarily would have the same laboratory experiences, nor would the faculty advisor of the group necessarily have all or any of her group members as a student in her own laboratory setting.

Evaluation of Students

The group structure facilitated the evaluative process. The instructor

who had the student in a laboratory setting sent a written evaluation to the student's group advisor, who collected, collated, and prepared a composite written report, and conducted the final evaluation interview. The conference was not in lieu of others the instructor might have had with the student. As a minimum, one faculty member on each team had the opportunity to know the student well through the group process and through the final evaluation procedure.

It had been expected that the team structure would not prevent the faculty from working in areas of their special preparation. Faculty were encouraged to move from team to team to give lectures in their areas of expertise and to serve as consultants to other faculty and students.

The Grant

The new curriculum was in its first year of implementation as plans for formal evaluation were developed in 1966-1967. Funds from the Nurse Education and Training Branch of the Division of Nursing, Bureau of Health Manpower, Department of Health, Education, and Welfare Public Health Service, initially were sought in 1966 to finance a five-year project to develop and use tools for evaluation of the curriculum at U.S.F. The approved project design included the participation of the University of Portland's School of Nursing as a reference group. The Curriculum Evaluation Project[1] was formally begun in September, 1968, and extended to August 31, 1973.

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[1]The project, "Development and Use of Tools for Curriculum Evaluation," was supported by Grant No. D 10 NU 00235-05, National Institutes of Health, U.S.P.H.S.

CHAPTER 2

THEORETICAL RATIONALE

The theoretical rationale of the CEP research design is three dimensional. These dimensions include 1) change in students, 2) role perception, and 3) curriculum theory. The significance of previous research relating to each of these dimensions as well as the dimensions themselves are discussed in this chapter.

Change in Students

In 1957 Jacob[1] summarized his review of the research on characteristics of students in higher education in the United States. He was concerned with the impact of courses or a four-year sequence of courses on the affective and cognitive development of students. The studies focused on students as individuals rather than on relationships with faculty or other college sub-groups. Jacob concluded that the impact of the college experience was "to socialize (rather than liberalize) the individual," to refine, polish, or "shape up" his values so that he can fit comfortably into the ranks of American college alumni.[2] He indicated that there was more homogeneity and greater consistency of values among students at the end of their four years than when they began:

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[1]Philip E. Jacob, Changing Values in College (New York: Harper and Bros., 1957), pp. 4-85.

[2]Ibid., p. 4.

the students had lost their individuality.[1] He also noted that students' values and outlook did not vary greatly whether a professional, integrated, or conventional liberal arts program had been followed.[2] The quality of teaching had relatively little effect upon value outcomes of general education, teachers had relatively little effect on the communication and maturing of student values, and methods of instruction had only a minor influence on value outcomes of liberal education.[3] He also raised an interesting question concerning the impact of an integrated liberal arts program and its relationship to teaching effectiveness in challenging and stimulating students.[4]

A more optimistic view concerning the impact of college life on students was found in the research findings of McConnell, Heist, Freedman, and Webster. They noted that 1) the college population is diverse in intellectual and non-intellectual characteristics,[5] 2) students entering the professions are diverse and heterogeneous,[6] and 3) systematic personality changes are going on (particularly in women) during the first two years of college.[7] They further suggest that by viewing student characteristics and expectations

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[1]Ibid., p. 5.

[2]Ibid., p. 7.

[3]Ibid., p. 8.

[4]Ibid., p. 85.

[5]T.R. McConnell and Paul Heist, "The Diverse College Student Population," in The American College, ed. by Nevitt Sanford (New York: John Wiley and Sons, Inc., 1962), pp. 225-250.

[6]Paul Heist, "The Student," in Education for the Professions, pt. 2, ch. 10 of 61st Yearbook of the National Society of Education, ed. by Nelson B. Henry (Chicago: University of Chicago Press, 1962), pp. 211-234.

[7]Harold Webster, Mervin Freedman, and Paul Heist, "Personality Changes in College Students," in The American College, ed. by Nevitt Sanford (New York: John Wiley & Sons, Inc., 1962), p. 843.

in terms of the demands and learning opportunities of the college environment, one may determine the effect of a college curriculum.[1]

This research on college students, as available up to and including 1968, was the rationale for the adoption of change in students as one important dimension of the CEP. It also served as the basis for the formulation of assumptions related to anticipated change in nursing students, as measured by the EPPS and OPI.[2]

One of these postulates was that the primary intellectual abilities of U.S.F. and U.P. students would increase as they progressed through their professional programs. Over ninety percent of the students enrolled in the two schools were Catholic, and the majority were graduates of private high schools. Hassenger[3] had shown that Catholic students in Catholic colleges score lower in intellectuality than Catholic students in other private or public colleges, as measured by the OPI. He further stated that Catholic college students were less interested in ideas, in critical thought, and in matters of aesthetic concern. Thus, in the CEP it was expected that on admission to the two nursing programs, the students would be less interested in the world of ideas than in the real world of professional skills. While these students might have been exposed to problem-solving techniques and the scientific method in the secondary schools, it was anticipated that they would place a high value on directed learning experiences and the presentation of structured, professionally oriented subject matter.

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[1]McConnell and Heist, "The Diverse College Student Population," The American College, p. 250.

[2]Refer to Appendices H and I.

[3]Robert Hassenger, ed., The Shape of Catholic Higher Education (Chicago: University of Chicago Press, 1967), p. 138.

Having been exposed to a series of planned and directed learning experiences, would these students change? Hassenger[1] had indicated that while change was minimal, four years of college produced a somewhat greater interest in non-pragmatic, reflective thought among Catholic college students. The overall difference was not great, nor were absolute levels of intellectualism high when measured at the end of the senior year. In a study of student teachers, Thompson[2] indicated that students with high scores in Complexity on the OPI value general support, freedom and independence, and help with details in the order stated. He had assumed that students of varying OPI Complexity levels would react in certain ways to learning assignments if the complexity scales were a valid predictor of student teacher behavior. Therefore, the CEP investigators expected senior nursing students with higher intellectual scale scores to value theoretical considerations more because they are then able to infer connections and relationships to practical laboratory experiences.

The investigators assumed that social and emotional characteristics, authoritarianism, and allegiance to religious values of professional nursing students would remain stable throughout their educational programs. Trent[3] indicated that the more enclosed a student is in his religious system, the less likely he is to have an open and flexible attitude. He stated further that students entering Catholic colleges are the most religion-oriented of

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[1] Ibid., p. 139.

[2] Alvin H. Thompson, "The Secondary Teacher Experimental Program" (unpublished Ed.D. dissertation, University of California, Berkeley, 1965), pp. 86-87.

[3] James W. Trent, Catholics in College (Chicago: University of Chicago Press, 1967), p. 59.

all students[1] and that Catholic college students are found to be more authoritarian than autonomous after their college experience. Hassenger[2] indicated also that freshman Catholic college students are low in non-authoritarianism and inclined toward dogmatism and intolerance, and that there are no significant changes when tested as seniors.

Nursing students generally have limited opportunities to function as autonomous, independent, professional practitioners in their educational programs. However, the investigators expected that the students admitted to the U.S.F. and U.P. programs would be sure of themselves, capable of self-insight, and possess few attitudes characteristic of the emotionally disturbed or socially alienated. While nursing students might indulge in whimsical, unconventional behavior at times, they tend to be tradition-oriented and place high value on ritualistic practice and symbols. Some of the general maturation factors associated with the adolescent "plumage" role often conflict with the demands made by the profession concerning attire and behavior. Yet, nursing students have been found to be interested in being with and working with people. They seek social activities and gain satisfaction from them. The investigators expected that these characteristics would be typical of U.S.F. and U.P. students entering the profession and would remain unchanged. While admission criteria to the two schools of nursing do not include psychological evaluation, those who complete the programs are expected to be "stable" persons who have resolved their own internal conflicts to a large extent and who appear to have achieved sufficient integration to make their abilities

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[1] Ibid., p. 184.

[2] Hassenger, Catholic Higher Education, p. 138.

effective.[1]

Another general assumption was that professional nursing students progressing through the U.S.F. and U.P. programs would become less altruistic and increasingly anxious, and would demonstrate greater concern for the practical day-to-day realities of life. In a study of the interaction approach to the development of self-concepts, Bostwick had found that the graduate interns in the teacher education program at the University of California, Berkeley, demonstrated a downward variation on the Anxiety Level scale of the OPI, thus indicating an increase in the amount of anxiety and problems of adjustment at the end of their fifth-year professional program. Bostwick described this as a "condition not wholly unexpected of individuals striking out on their own."[2] Similarly, in the Vassar study, Freedman[3] had noted that seniors are tense, frustrated, and confused. They feel academic and social pressures and inadequate with their new identities. As seniors leave the protected college environment, they begin to speculate whether their education has prepared them for life. Freedman suggested, however, that professional students experience less conflict than liberal arts students concerning their education as preparation for life; he also suggested that many seniors rush into marriage, seeing it as a solution to these problems.

In contrast to Freedman, the CEP investigators anticipated that

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[1]Wm. J. McGlothlin, The Professional Schools (New York: Center for Applied Research in Education, 1964), p. 84.

[2]Janis L. Bostwick, "An Interaction Approach to Self Concepts of Candidates in Teacher Education Programs at the University of California, Berkeley" (unpublished Ed.D. dissertation, University of California, Berkeley, 1966), p. 47.

[3]Mervin B. Freedman, "The Passage through College, Personality Development during the College Years," Journal of Social Issues, XII (1956), 13-28.

senior nursing students at U.S.F. and U.P. would feel threatened by the prospects of state board nursing examinations and the expectations of initial employment, and also would lack confidence in their knowledge of scientific principles and subject matter. In addition to being insecure about their competence as professionals, it was expected that they would be critical of the faculty and their programs of preparation. As seniors they would become more self-oriented and would lose their idealistic concern for the welfare of humanity. They would tend to be disillusioned, cynical, and more concerned about their own images and roles as women, homemakers, and mothers. This expectation of the CEP investigators found support in the findings of the Hagen Report that the "American [college] student is an idealist oriented toward service for his fellow man, but much of this idealism withers during the college years."[1]

The investigators believed that as seniors the U.S.F. and U.P. students would accept the concept of problem-solving and the philosophy of professional practice based on scientific principles, and would be concerned about their personal adjustment and adaptation to new situations. On the other hand, these seniors would tend to place a higher priority on technical competence than a scientific rationale for nursing practice, prefer straightforward rules and directions, and demand more opportunities in which to achieve technical competence in their preparation programs. However, in predicting teacher competence, Howden[2] had noted that the more competent

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[1] Report of the Committee on the Student in Higher Education, Joseph F. Kauffman, chairman (New Haven, Conn.: The Hagen Foundation, 1968), p. 47.

[2] J. Robert Howden, "Predicting Teacher Competence Using the OPI and the ETAS" (unpublished Ph.D. dissertation, University of California, Berkeley), p. 82.

teacher scores low on the Practical Outlook scale of the OPI, indicating that the competent teacher places a low priority on things in terms of their immediate practical value.

Another hunch was that beginning U.S.F. and U.P. students would be characterized as deferent, concerned for others, conscientious, and organized. They would be less likely to be aggressive and domineering or to depend on others, and more likely to accept themselves and things as they are. As they moved through their programs, they would become more free and independent, more flexible, and more goal oriented, but would not have changed in amount of deference or their need to be organized. Reese,[1] Stein,[2] and Bailey and Claus[3] had demonstrated that beginning students in baccalaureate programs of nursing have high needs for deference, order, intraception, nurturance, and endurance, and low needs for exhibition, affiliation, succorance, abasement, and aggression, as measured by the EPPS. Izzard[4] had suggested that college students might shift their relative standing within the group in certain needs much more so than in others, and that the observed changes which do occur must be considered in part as personality development in the direction of social and emotional maturity.

The investigators were convinced that U.S.F. and U.P. students already

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[1]M.M. Reese, "Personality Characteristics and Success in a Nursing Program," Nursing Research, X (Summer, 1961), 172-176.

[2]Rita F. Stein, "The Student Nurse, a Study of Needs, Roles, and Conflicts, Part I," Nursing Research, XVIII (July-August, 1969), 308-315.

[3]June T. Bailey and Karen E. Claus, "Comparative Analysis of the Personality Structure of Nursing Students," Nursing Research, XVIII (July-August, 1969).

[4]Carroll E. Izzard, "Personality Change during College Years," Journal of Consulting Psychology, XXVI (1962), 482.

possessed the characteristics typical of successful practitioners when they enter the program and that pronounced changes in personality structure would not occur between the beginning and the completion of the curriculum. Faculty would only cultivate the potentials which the students already possessed.

Research has shown that typical, successful nursing students are atypical of usual college women in certain need patterns. For example, Reese[1] suggested that students who withdraw from nursing programs tend to be like norm subjects in their need for achievement, deference, order, endurance, and aggression as measured by the EPPS, and like those who successfully complete nursing programs in their needs for autonomy, succorance, abasement, change, and hetersexuality. The investigators observed that the nursing curriculums at U.S.F. and U.P. provided for and encouraged the participation of nursing students in total campus life throughout their university programs. Hence, it seemed reasonable to expect that they would tend to take on the attitudes and opinions generated by the college student body.

Other research has shown that needs for nurturance, order, and deference are typical characteristics of individuals electing and succeeding in nursing. However, the expectations of the U.S.F. and U.P. programs to develop nurses as leaders and change agents would be in conflict with these research findings. Therefore, the CEP investigators speculated that a change in needs for deference, nurturance, et al., would occur if the integrated curriculums were successful in meeting their purposes.

Role Perception

A crucial factor influencing degree and direction of student change

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[1]Reese, "Personality Characteristics," p. 174.

is role perception. Parsons has defined role as the "system of normative expectations for the performance of a participating individual in his capacity as a member of the collectivity."[1] He further states that role is the primary point of direct articulation between the personality of the individual and the structure of the social system.

Students admitted to a professional program in an undergraduate curriculum are faced with a complexity of role expectations. Gross et al.[2] had indicated that expectations are assigned to individuals on the basis of their locations or positions in the social system. Thus, it would appear that professional nursing students have a dual role: that of student and neophyte professional practitioner.

Biddle[3] presents descriptive and prescriptive definitions of role theory. The descriptive orientation deals with the individual's assessment of reality: his picture of things as he presumes they are. The prescriptive orientation describes the "oughts" or rights and wrongs of reality rather than its assessment. A descriptive cognition applied to the behavior of a person or position is an expectation, whereas a prescriptive statement about the behavior of a person or positions is a norm. One would use expectations of the behavior of another as a basis for planning interactions with him. Norms may be unique to the person, as with expectations, or may reflect a system of social values or laws. An assumption undergirding the CEP was

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[1]Talcott Parsons, Sociological Theory and Modern Society (New York: The Free Press, 1967), pp. 10-11.

[2]Neal Gross, Ward S. Mason, and Alexander McEachern, Explorations in Role Analysis (New York: John Wiley and Sons, 1958), p. 18.

[3]Bruce J. Biddle, J. Paschal Twyman, and Earl F. Rankin, "The Role of the Teacher and Occupational Choice," School Review, LXX (1962), 191-206.

that career decisions to enter nursing are based partly on expectations, since the neophyte nurse has limited personal knowledge of the profession upon which to draw in making career decisions, and partly on norms which had significance for career decsions, particularly if nurses (or nurse faculty) are perceived as violating the norms held by the nurse student.

Role, however, is more than expectations and norms. Career decisions and progress through professional nursing programs may be the result of more complex role elements. Professional nursing students may attribute norms and expectations to parents, physicians, relatives, and patients. Students' perceptions of themselves as professionals and as students also are influenced by expectations which faculty, other professional nurses, physicians, patients, and liberal arts students hold for nurses. It was assumed that the integrated curriculums would have an impact on nursing students' progress and achievement, whether society held the expectation or norm, or whether the student thought society held the expectation or norm.

It was reasonable to predict that there would be a gap between the students' and faculty's concepts of nursing. A second gap might exist between the concept held by the faculty and that of the consumers of nursing services. The students' inability to cope with role distortions might be responsible for withdrawal from the program, negative change, or resistance to curricular objectives. The need to "fit" the college student to the program, or to the university, is the subject of comment in current research. The fact remains that if extensive and significant differences exist between students and faculty in role expectations and norms, there will be serious implications for the degree and direction of student change.

Levinson[1] discussed two levels of adaptation in personal role definition: role conception at the ideational level and patterns of role performance at the behavioral level. A nurse student may be expected to modify modes of adaptation in the face of confrontation with complex systems of role expectations. The response may be one of passive adjustment, apparent conformity with unapparent "sabotage" or hostility, a furthering of role demands, or attempts at constructive innovation. The degree to which the student "fits" role requirements may serve to maintain or influence change. It also may include a high or low degree of commitment and personal involvement. Since nursing students are placed in many different types of learning situations and face the varied expectations of numerous faculty as well as other members of society, it was reasonable for the CEP investigators to assume that the degree of uniformity of role concept would vary from situation to situation. Subsequently, the student's perception of the curriculum and the degree to which it did or did not meet expectations might vary from time to time. It also was possible that students might change their attitudes towards role because of personality development or changes in their private lives, and that the social environment of role as student or professional might have little or nothing to do with the change.

Education has been described as a socialization process, during which the essential prerequisites of commitment and capacity of an individual for future role performance are developed. Through the socialization process, congruence is established between the personal interests of the student and his responsibilities to the larger system, the profession. In the CEP, the

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[1]Daniel J. Levinson, "Role, Personality, and Social Structure in the Organizational Setting," Journal of Abnormal and Social Psychology, LVIII (March, 1959), 170-180.

research design was structured to obtain the students' perceptions of the curriculum as it actually is and their prescriptions for it as they would have liked it to have been. Thus, various elements influencing nursing education as a socializing process would be measured: curricular objectives, goals, and values; faculty-student roles and relationships; curriculum implementation and methods of instruction; and opportunities provided to achieve skills necessary for competent role performance.

Curriculum Theory

In addition to change in students and role perception, a third dimension of the theoretical framework of the CEP was curriculum theory. Curriculums are designed to serve multiple objectives, which include knowledge of subject matter, development of cognitive processes and attitudes, and the acquisition of skills. A key factor in the development of any curriculum is the organization of learning experiences and content. The learnings in any educational experience are determined by the steps necessary to create an increasingly integrated organization of concepts and ideas from simple to complex. The organization of learning experiences is psychological; the organization of the content is logical and psychological. Curriculum units are envisioned as large, organized wholes. The specific content is organized to stress contextual relationships and understandings. Emphasis is placed on problem-solving, so that the act of learning becomes a transaction between content and learner. Emphasis also is placed on understanding of student as learner. Curriculum objectives provide for emotional, social, and intellectual development of students. These elements of curriculum theory are inherent in the integrated curriculums developed at U.S.F. and U.P. and are typical of the components contained in the field theory of learning.

Field theory defines learning as "change in the cognitive structure, or in the way of perceiving events and giving meaning to them."[1] Taba describes the field theory in learning as that which "extends the concept of the 'wholeness' of the learning situation by demonstrating the role played by the culture and social environments in determining what man responds to and what meaning he gives to what he perceives."[2] The CEP investigators assumed that the various cultural and social environments in which students are placed for learning experiences shape and direct their perceptions and valuations about nursing. Forces operating in their learning situations include perceptual selectivity, personal goals and needs, personal cultural demands, and previous experiences. In the U.S.F. and U.P. nursing programs, the faculty assist students to identify their position on the learning continuum, state personal objectives for their educational experiences, and participate in the evaluation of progress towards learning goals. Part of this evaluation process involves identification of factors which influence the learning process, such as student-faculty relationships, student-patient relationships, or the thwarting of educational goals due to unforeseen circumstances.

The U.S.F. and U.P. faculties' ideas about learning were to emphasize process rather than product; i.e., facts are important to the degree to which they contribute to the formation of new concepts or facilitate the process of problem-solving. They believed that the process of arriving at these ideas and finding alternative ways of using them to create new knowledge was more

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[1]Kurt Lewin, Field Theory in Social Science (New York: Harper and Brothers, 1951), p. 74.

[2]Hilda Taba, Curriculum Development, Theory, and Practice (New York: Harcourt, Brace, and World, 1962), pp. 81-84.

important than the accumulation of specific facts which aid the process. For this reason, the faculties stressed integrated learning and relationships rather than the acquisition of specific content.

Taba indicates that field theory views learning as a social process: one learns by interacting with others.[1] Therefore, throughout the U.S.F. and U.P. programs, the provision for group work assumed high priority in both theory courses and laboratory experiences. Interaction was guided, promoted, and analyzed.

Individual differences are crucial in field theory. In the U.S.F. and U.P. programs, provisions were made for individual differences among students. They were encouraged to state their own learning goals and to plan many of their own learning experiences. Some learnings were acquired through independent study, and adjustments were made in schedules, methods of learning, and forms of evaluation to meet the unique needs of students. To a degree, students were permitted to progress at their own rate of learning, but within the stated objectives of the particular course.

Motivation is central in field theory. Students in the U.S.F. and U.P. programs are highly motivated. Interest and motivation were enhanced by assisting students to identify their basic needs and goals, since role perception conflicts may mitigate motivation. Opportunities to experience success through practice, if not repetition, were planned. Field theory indicates that instrinsic motivation is likely to be a more stable stimulator of learning than extrinsic rewards.[2]

Theories of learning focus on what the learner does, but the changes

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[1] Ibid., p. 82.

[2] Ibid., p. 82.

occurring in the learner depend on what faculty do as teachers. In fact, Gage[1] states that "changes in how learners go about their business of learning occur in response to the behavior of teachers or others in the educational establishment." Much has been written about methods of teaching. The nature of teaching, like nursing, as an art and as a science, also has been debated. However intangible the nature of teaching might be, it seemed reasonable to make the obvious assumption that teaching involves student-teacher relationships and that the teaching-learning process is influenced by the various roles played by the participants. In the U.S.F. and U.P. programs, student-faculty relationships were formalized in the stated objectives of the two curriculums and, therefore, constituted a basis for objective and subjective evaluation in the design of the research project. Provision was made for formal and informal evaluation of learning opportunities and experiences, which constituted the "life space" of students, and the factors related to program planning and scheduling, teaching methods, procedures, and evaluation, which constituted the forces or variables affecting the "life space."

Summary

In this chapter, the theoretical rationale of the CEP's research design has been discussed in terms of: 1) change in students, 2) role perception, and 3) curriculum theory. The various assumptions made by the investigators in formulating the design have been introduced and their origins documented. The research design and the major investigative tool, the Curriculum Evaluation Q-Sort (CEQ), based on this theoretical framework

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[1]N.L. Gage, "Theories of Teaching," Theories of Learning and Instruction, pt. 1, ch. 11 of 63rd Yearbook of the National Society for the Study of Education, ed. by Ernest R. Hilgard (Chicago: University of Chicago Press, 1964), pp. 271-272.

are described in Chapter 3.

CHAPTER 3

THE RESEARCH DESIGN

As described in Chapter 1, the U.S.F. nursing curriculum is a four-year baccalaureate program offered at a private Catholic urban university. Prospective nursing students are admitted as freshmen to the School of Nursing on the same basis as other freshmen at the University, including CEEB SAT scores, high school grade point averages, and predicted university grade point averages. During their freshman year, all course work is taken in the College of Arts and Sciences. Professional preparation begins with two courses in the sophomore year and increases in depth and complexity throughout the junior and senior years. The reference group for the investigation, the School of Nursing at the University of Portland, also offers a four-year baccalaureate nursing program at a private Catholic urban university. U.P. has comparable admission and retention standards and provides a nursing curriculum similar to U.S.F.'s in objectives and methods of implementation (Appendix C).

Purpose

The purpose of the CEP was to describe and analyze the perceptions of nursing students concerning the professional curriculum as they saw it and as they would have liked it to be. These perceptions were measured against both intellectual and non-intellectual characteristics of the students. The success of students in the new curriculum at U.S.F. was compared with that of those who had completed the similar program at U.P. and with that of students

who had completed the former curriculum at U.S.F.

The major questions for investigation were:

1) Is the new curriculum at the U.S.F. School of Nursing achieving the objectives set for it?

2) Do the students change as a result of their exposure to the new curriculum?

3) How do the U.S.F. new curriculum graduates compare with the old curriculum graduates?

4) How do the U.S.F. new curriculum graduates compare with new curriculum graduates at U.P.?

5) What are faculty and student reactions to the new program at each institution?

Hypotheses

On the basis of the five questions, eight hypotheses and the rationale for each of them were formulated as follows:

1) U.S.F. graduates of the old curriculum (1965-1969) will not differ significantly from graduates of the new curriculum (1969-1972) on State Board Test Pool and National League for Nursing examinations.

This hypothesis was based on the assumption that the stated objectives and purposes of the U.S.F. nursing curriculum are essentially unchanged since 1960, and that students of the same caliber and background continue to be admitted to the program as in 1961. It further was assumed that any differences in the two groups attributable to the planned changes in the curriculum would not be measured by State Board Test Pool or National League for Nursing examinations.

2) U.S.F. graduates of the new curriculum (1969 and 1970) will not differ significantly from U.P. graduates of their new curriculum (1971 and 1972) on State Board Test Pool and National League for Nursing examinations.

This hypothesis was based on the assumption that since both schools

were located in urban, religious, private universities, since the stated philosophy and objectives of each curriculum were comparable, and since the approaches to nursing instruction were similar, the examination scores of the two groups would be alike. The assumption of comparability of scores of the two groups was based also on the fact that each school was fully accredited, carried the same number of units in the professional component of the curriculum, and exercised similar admission and retention policies.

3) There will be no significant pre-curriculum test differences between beginning students in nursing at U.S.F. (1971 and 1972) and U.P. (1971 and 1972) in the measurement of the following five variables:
   a. Demographic background
   b. Academic ability
   c. Personality characteristics
   d. Leadership qualities
   e. Personal attitudes

The third hypothesis was based on the assumption that the same type of student was admitted to the programs at U.P. and at U.S.F. and that the factor of having chosen the same professional goals, ipso facto, would make them alike in these measurable variables.

4) There will be no significant post-curriculum test differences among graduates in nursing at U.S.F. (1969 and 1970) and U.P. (1971 and 1972) in:
   a. Personality characteristics
   b. Leadership qualities
   c. Personal attitudes

The fourth hypothesis was based on the assumption that similar students experiencing comparable learning experiences directed towards the same goals would manifest similar change (or lack of change) as a result of the nursing curriculum.

5.1) The U.S.F. Class of 1972 will not show significant pre-curricular test differences from the Class of 1973 on personality, leadership ability, and personal preference, nor will they show significant post-curricular test differences from the Class of 1969 on the same

three variables.

This hypothesis was based on the assumption that the U.S.F. Class of 1972 would be similar to other classes admitted to the School of Nursing, thus providing a basis to generalize the findings.

5.2) At the end of a professional curriculum in nursing education, students at U.S.F. and U.P. will have changed in their personality characteristics, leadership ability, and personal preference.

This hypothesis was based on the assumption that the specific goal-oriented learning experiences of the nursing program would produce a measurable change in the personality characteristics, leadership qualities, and attitudes of students which had been measured before and after exposure to the professional component of the curriculum.

Up to this point, the hypotheses were based on comparisons of the beginning students at the two institutions, their graduates, and the graduates of both the former and integrated curriculums at U.S.F. The next three hypotheses focus on expectations concerned with significant findings unique to student perceptions at the various curricular levels at U.S.F.

6) U.S.F. sophomore, junior, and senior students in nursing will perceive their professional nursing curricular experiences in significantly different patterns.

This hypothesis was based on the assumption that expectations and perceptions of students would change as they progressed from sophomore to senior status in the nursing program.

7) There will be no significant difference in the students' perception of the nursing curriculum as it is and as they would like it to be.

This hypothesis was based on the assumption that there would be congruence (fit) between goals of professionally oriented students and those of the program they chose to enter, that nursing students readily would take on

the goals and professional characteristics of the faculty, would tend to like what they experienced, and would share common values.

3) Homogeneous subgroups of nursing students within the U.S.F. Classes of 1969-1972 will not similarly evaluate their curricular experiences.

The final hypothesis was based on the assumption that perceptions and expectations of students in the nursing program at U.S.F. would vary according to personality characteristics, scholarship, leadership abilities, and personal attitudes.

The Design

To answer our five major questions and test the eight hypotheses, both quantitative and qualitative data were collected, as described below.

Quantitative Data

1) U.S.F. graduating classes of 1965, 1966, 1967, and 1968 (the old curriculum) were compared with the graduating classes of 1969, 1970, 1971, and 1972 (the new curriculum), using State Board Test Pool and National League for Nursing examination scores.

2) U.S.F. graduating classes of 1969 and 1970 were compared with U.P. graduates of 1971 and 1972 by a test battery composed of the Omnibus Personality Inventory (OPI), the Edwards Personal Preference Schedule (EPPS), the Leadership Ability Evaluation (LAE), as well as State Board Test Pool and National League for Nursing examination scores. These instruments are described later in this chapter.

3) In the Spring of 1969, the first graduates of the new U.S.F. curriculum were given the test battery for later comparison with the post-curriculum test battery of the Class of 1972: the Class of 1973 was given

the pre-curriculum test battery for later comparison with the Class of 1972, which had also taken the test battery prior to beginning the professional component of the curriculum.

4) Demographic data were collected and tabulated for students in both schools, providing as complete information on each student as was practical in order to describe thoroughly the two sample populations. A seventy-two item questionnaire was devised for this purpose (Appendix D).

5) A seventy-two item Curriculum Evaluation Q-Sort (CEQ) was developed to evaluate the new curriculum from the students' perceptions and was given each Spring to U.S.F. students during the four years of data collection (Appendix E). Each student performed the CEQ twice at each sitting: the first, as she perceived the curriculum "as it really was" (Descriptive CEQ), and the second, "as she would like it to be" (Prescriptive CEQ). It was expected that comparison of the two Q-sorts would provide a measure of student satisfaction with the U.S.F. curriculum.

Qualitative Data

Focused interviews with senior students, four years at U.S.F. and two years at U.P., were conducted in the Spring of each year. The interviews were taped for transcription and analysis in terms of a predetermined set of ideas (Appendix F).

Instruments

An overview of the instruments used in the collection of data follows.

Demographic Questionnaire

A seventy-two item questionnaire was developed to describe and compare

demographic data on U.S.F. and U.P. students completing the nursing programs. The U.S.F. faculty participated in the development of the questionnaire, suggesting variables thought to be significant factors affecting student progress in the curriculum. Particular items were written to elicit information concerning students' leadership activities before entering college as well as during the nursing program. Certain of these variables were selected to use as cross-checks in determining the characteristics of students who might evaluate the curriculum in different ways. These biodata items included:

Age
Religion
Ethnic group
Marital status
Social class of father
Religious order
Citizenship
CEEB SAT scores
Final grade point average

The CEQ

A seventy-two item Q-sort was developed by the project staff.[1] The CEQ items are impersonal, objective, factual statements about the nursing program: its educational objectives, its rationale, and some of the prominent features of the teaching-learning process it attempts to implement and facilitate. The items are, for the most part, simple, declarative statements whose subjects are reiterated and whose predicates are varied, but always in the generalizing present tense and indicative, active mode. The term "student" is included in almost every statement as the direct or indirect object of the predicate or of a closely linked preposition. The items constitute a

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[1]James C. Stone and Joan L. Green, "The Double Q-Sort as a Research Tool," The Journal of Experimental Education, XL (Fall, 1971), 81-88.

stratified, representative sample of the almost infinite number of perceptions that students might have regarding the program (or of the plausible statements they or the faculty might make about the program). The strata of the sample are four categories of program features over which the nursing faculty has at least some control and which it can modify in response to students' perceptions and comments if it so desires. The four categories are:

I. Curriculum: Learning Objectives, Opportunities, and Experiences

II. Program: Planning, Scheduling, and Evaluation

III. Instruction: Teaching Styles, Methods, and Procedures

IV. Interpersonal Relations: Teacher-Student Roles and Relationships

All the items are more or less accurately descriptive or generally characteristic statements of program features. They were selected and written to be sorted into seven piles representing as many points on the rank-order continuum from "least accurately descriptive or generally characteristic" to "most accurately descriptive or generally characteristic," with a mid-point and corresponding pile for statements which are "more or less accurately descriptive or generally characteristic but too difficult to judge." All items are therefore written as positive statements, at least in the sense that none are "reversed" to fit a scale with a natural origin.

The items are selected and written to be sorted two times by each student on each occasion: first, to represent the student's testimony that "these are the facts about the program as I actually perceive them" (Descriptive CEQ), and second, to represent her critical judgment that "these are what I think the features of the program should be" (Prescriptive CEQ).

Test Battery

The Leadership Ability Evaluation (LAE)[1] was selected to assess the decision-making pattern or social climate created by the student when functioning as a leader in influencing other persons or groups. It was administered to U.S.F. and U.P. students prior to exposure to the professional component of their curriculum and again at its culmination.

The concept of leadership used in the test implies "that a person in a leadership capacity is concerned with influencing another person or group to move psychologically toward the leader's objectives."[2] Four decision patterns are described. A single total score is reported, providing an indicator to acceptable or unacceptable leadership patterns as well as the individual mode scores. The four decision patterns are:

1) Laissez Faire
2) Democratic-Cooperative
3) Autocratic-Submissive
4) Autocratic-Aggressive

Descriptions of the decision patterns are included in Appendix G.

The second instrument selected for the pre and post-curriculum test battery was the Edwards Personal Preference Schedule (EPPS).[3] It provides a measure of fifteen independent normal personality variables. The names of the variables are:

1) Achievement
2) Deference
3) Order
4) Exhibition

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[1]Russell N. Cassel and Edward J. Stancik, The Leadership Ability Evaluation (Beverly Hills: Western Psychological Services, 1961).

[2]Ibid., p. 1.

[3]Allen L. Edward, Edwards Personal Preference Schedule (New York: The Psychological Corporation, 1954).

5) Autonomy
6) Affiliation
7) Intraception
8) Succorance
9) Dominance
10) Abasement
11) Nurturance
12) Change
13) Endurance
14) Hetersexuality
15) Aggression

These variables are described in Appendix H.

A major reason for including the EPPS in the test battery was because it has been used in a number of studies involving nurses to determine attitudinal changes associated with exposure to nursing experiences, characteristics differentiating nurses from other professional groups, and to predict success of nurses completing programs of preparation.

The Omnibus Personality Inventory (OPI)[1] was selected as the third instrument in the test battery. It was developed to assess certain attitudes, interests, and values relevant to normal intellect and ego activity. The fourteen scales represented in the inventory are:

1) Thinking Introversion
2) Theoretical Orientation
3) Estheticism
4) Complexity
5) Autonomy
6) Religious Orientation
7) Social Extroversion
8) Impulse Expression
9) Personal Integration
10) Anxiety Level
11) Altruism
12) Practical Outlook
13) Masculinity-Feminity
14) Response Bias

A single score, "Intellectual Disposition Category," also is reported.

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[1]Paul Heist and George Yonge, Omnibus Personality Inventory, Form F (New York: The Psychological Corporation, 1968).

Definitions of the scales are included in Appendix I. The OPI has been used in other studies related to the impact of baccalaureate degree programs and purports to measure change in college students resulting from academic endeavor and the achievement of educational objectives.

Interviews

A random sample of students (U.S.F. Classes of 1969-1972 and U.P. Classes of 1971-1972) was interviewed in the late Spring of each senior year. Group interviews were conducted with five to six students in a group. A sufficient number of group interviews was held each year to yield a sampling of 20 to 25 percent of each class. The taped interviews were conducted by an educator not connected with either U.S.F. or U.P. Their purpose was to assess in depth the students' reaction to the professional component of the program: its major strengths, its weaknesses, and their suggestions for change or improvement. The sessions were focused through the use of Q-cards.[1] In the Q-card technique, a stack of cards containing a "trigger" phrase is placed before each member of the group. This procedure was designed to result in productive responses and the free flow of opinions in a systematically, but less visibly, structured manner.

Analysis of Data

The basic unit for analysis of the quantitative data was one-way multivariate analysis of variance. This method facilitates a simultaneous test for equal means for a number of groups on some set of variables. Technically, the groups are referred to as the "levels of a factor," and the

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[1]Joan L. Green and James C. Stone, "Developing and Testing Q-Cards and Content Analysis in Group Interviews," Nursing Research, XXI (July-August, 1972), 342-347.

set of variable means for a particular group as the "vector of means." Hence, the most common hypothesis under test is that the mean vectors of all levels of a factor are equal. This method is superior to the more widely used univariate analysis of variance since it takes into account the correlation between variables. Nevertheless, univariate tests were made when particular characteristics of a test profile were of particular importance and univariate levels of significance were reported.

Another multivariate statistical technique was utilized for the analysis of CEQ data which, unlike standardized tests, does not automatically yield normed scores. A form of factor analysis, the BC-TRY Cluster Analysis, was used to discover a set of dimensions of students' attitudes as measured by the CEQ, and sets of standardized CEQ scores were computed for all program participants.[1] These scores, in turn, functioned as input for analysis of variance, thus enabling effective comparisons of groups.

The taped interviews were analyzed independently using a modified form of content analysis techniques.[2]

The Sample

Using the seventy-two item biodata questionnaire, comparable information was secured from each senior in the U.S.F. Classes of 1965, 1966, 1967, and 1968 (the old curriculum) and 1969, 1970, 1971, and 1972 (the new curriculum). The same data were secured from U.P. seniors in the Classes of 1971 and 1972. At the time the investigation began (1968), there were

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[1]Robert C. Tryon and Daniel E. Bailey, Cluster Analysis (New York: McGraw-Hill Co., 1970).

[2]Richard W. Budd, Robert K. Thorp, and Lewis Donohew, Content Analysis of Communications (New York: Macmillan Co., 1967).

90 freshmen, 100 sophomores, 80 juniors, and 70 seniors enrolled in the new curriculum at U.S.F. In total (U.S.F. and U.P.), there were approximately 800 students in the study population. An analysis of the data supports the generalization of the remarkable homogeneity in the background of the students who are the subjects of this investigation. A descriptive profile of the typical U.S.F. student follows:

> She is a Caucasion between 21 and 22 years of age, single, a U.S. citizen, of Roman Catholic faith but not a member of a religious order, who considers herself in excellent health and not suffering from any chronic illness, physical disability, or handicap. If she speaks a foreign language, it is most likely Spanish. The odds are that she has traveled to Europe, Canada, and Mexico. Both her parents are alive and living together. She is the oldest of several brothers and sisters. Her mother is more likely to be Catholic than her father, but it is probable that he, too, is Catholic. Both father and mother are high school rather than college graduates. (College graduation varies from 15% to 32% for fathers and 2% to 27% for mothers.)
>
> In terms of Hollingshead's Index of Social Position,[1] her father either is a skilled worker, owns his own business, is a business administrator of a large concern, or is a semiprofessional, and the family's social class status, based on the father's occupation, ecology of the family residence, and amount of formal education, is middle class, with the mother a full-time homemaker. One out of ten times her father is a member of a health related profession. The odds are double that her mother is (or was) a nurse. Both parents support their daughter's decision to become a nurse and to attend an expensive, private university for this purpose.
>
> Our typical university nurse senior is likely a graduate of a Catholic high school of 500 to 1000 students in an urban community. When in high school, she was engaged in three to four extracurricular activities such as special interest clubs, musical organizations, school publications, or dramatic productions. The odds are she was elected to one or two leadership positions like class officer or special interest group club officer, received two or more academic or citizenship awards, and probably took part in one special instructional program such as advanced placement courses, independent study, or field service projects. In addition, she also was involved in one or more voluntary community service activities such as Candystriping or an officer in the CYA.

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[1] August B. Hollingshead and Frederick C. Redlich, Social Class and Mental Illness: A Community Study (New York: John Wiley & Sons, 1958), p. 387.

She chose the University of San Francisco either for its geographic location or the reputation of its nursing program, and came as a freshman rather than a transfer student. She likely received some financial aid during her four years as an undergraduate either from university or state scholarship funds. (One-fourth received such for four years.) She may have had a part-time job (as one-half did) and worked approximately from six to sixteen hours per week while carrying an average of sixteen semester hours of credit. She lived either at home or on campus; if on campus, she had a nursing student as her roommate. During her university career, she participated continuously in one or two extracurricular activities but likely did not hold any leadership position. She was awarded one special academic honor and was involved at sometime in one community service activity either as a tutor or counselor.

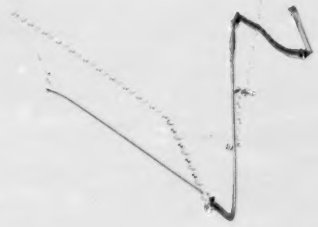
Upon graduation she expected to go immediately into nursing practice, either in medical-surgical or maternal and child health nursing service in a general hospital. At graduation she expressed future goals related to pursuing an advanced degree program in nursing rather than teaching or supervising in general nursing services.

By comparison, the typical U.P. student is the same as the U.S.F. student, except if she did speak a foreign language, it was more likely to be French or Portuguese rather than Spanish. She was more likely to have attended a public rural coeducational high school of 500 to 2000 students than a Catholic urban girls' secondary school. She probably did not participate in a special instructional program such as advanced placement, independent study, or field service projects while in high school. She was less likely to have had a part-time job while attending the university, but those who did worked 16 to 20 hours per week rather than 6 to 16. And she was more likely to have lived on campus with a fellow nursing student than to have lived at home with her parents.

Summary

This chapter has described the research design (including the rationale, hypotheses, and assumptions on which it was based), the instruments administered, method of data analysis, and the study populations.

Part II, Quantitative Findings, follows.



PART II

QUANTITATIVE FINDINGS

CHAPTER 1

HYPOTHESES 1 AND 2

Hypothesis 1

U.S.F. graduates of the old curriculum (1965-1969) will not differ significantly from graduates of the new curriculum (1969-1972) on State Board Test Pool and National League for Nursing examinations.

Since there had been no changes in the stated objectives of the U.S.F. nursing curriculum, and since students of the same caliber and background were admitted to the program at the beginning of the CEP, it had been assumed that there would be no difference in the achievement of the two groups, as measured by State Board Test Pool or National League for Nursing examinations.

For purposes of analysis, the hypothesis was subdivided into two research hypotheses.

Hypothesis 1-A

It had been expected that U.S.F. graduates of the old curriculum (1965-1968) would not differ from U.S.F. graduates of the integrated curriculum (1969-1972) on State Board Test Pool examinations. The presumption was to accept rather than reject the statistical statement of the hypothesis. Using one-way multivariate analysis of variance, the two groups were compared on the basis of the average standard scores of each student on the five separate examinations. The results are presented in Table 1.

Students enrolled in the old curriculum achieved higher mean scores

on all five of the examinations: Medical Nursing, Surgical Nursing, Obstetrics Nursing, Nursing of Children, and Psychiatric Nursing. The differences in mean scores are statistically significant at or beyond the .01 level of probability on four of the five examinations: Medical Nursing, Surgical Nursing, Obstetrics Nursing, and Nursing of Children; and at the .03 level on the fifth examination: Psychiatric Nursing. The difference between the two mean score vectors of the five tests is statistically significant at the .002 level of probability. In sum, the students enrolled in the old curriculum achieved significantly higher mean scores on all of the five State Board Test Pool examinations. Thus, Hypothesis 1-A is rejected.

Table 1. Comparison of Scores on State Board Test Pool Examinations: U.S.F. Seniors (1965-1968) and U.S.F. Seniors (1969-1972)

	1965-1968 (N = 178)		1969-1972 (N = 284)			
Examinations	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
Med. Nsg.	570.48	80.92	537.54	89.65	15.91	.0001*
Surg. Nsg.	550.89	73.84	524.42	90.31	10.78	.0012*
Obs. Nsg.	574.69	78.64	546.60	95.04	10.87	.0011*
Nsg. of Child.	562.03	79.33	530.75	37.46	15.02	.0002*
Psych. Nsg.	585.26	79.67	567.89	82.08	5.01	.0257

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors
$F_{5,456} = 3.8299$ P less than .0021

Hypothesis 1-B

It had been hypothesized that U.S.F. graduates of the old curriculum (1965-1968) would not differ from U.S.F. graduates of the new curriculum (1969-1972) on NLN examinations. The investigators expected to accept, rather than reject, the statistical statement of the hypothesis. The classes were compared on the basis of percentile scores reported for students in baccalaureate degree programs where there had been consistent use of the same

examinations. The examinations defined as variables were: 1) Normal Nutrition, given at the end of the sophomore year; 2) Maternal-Child Nursing and Nursing of Children, given during the junior year; and 3) Psychiatric Nursing and Public Health Nursing, given in the senior year. The analysis consisted of looking at the vector of mean scores for the two groups and making comparisons, using a one-way multivariate analysis of variance.

A summary of the descriptive data for each variable under analysis for the old and new curriculum groups is presented in Table 2.[1]

Table 2. Comparison of Scores on NLN Examinations: U.S.F. Seniors, 1966-1968 with 1969-1972

Examinations	Mean		S.D.	
	Old (N = 127)	New (N = 238)	Old (N = 127)	New (N = 238)
Normal Nutrition	45.7	23.6	24.9	19.0
Maternal-Child Nursing	51.3	50.7	25.1	27.5
Nursing of Children	46.1	49.6	26.4	27.9
Psychiatric Nursing	70.4	58.3	24.5	27.0
Public Health Nursing	55.5	41.7	24.7	24.8

The multivariate F statistic for testing equality of mean vectors was 34.7 and was found to be significant at the .01 level. Thus, some of the group means are significantly different.

Looking at the univariate F statistic for each of the five variables (Table 3), it is obvious that the significance is a direct result of mean differences in the two groups between the Normal Nutrition, Psychiatric Nursing, and Public Health Nursing variables.

The mean percentile scores for the old curriculum group are significantly higher than the mean percentile scores for the new group when the Normal Nutrition, Psychiatric Nursing, and Public Health Nursing variables

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[1]The "old" group consists of the Classes of 1966, 1967, and 1968 since the NLN Normal Nutrition examination was not administered to the Class of 1965.

are compared. Maternal-Child Nursing and Nursing of Children mean percentile scores are not significantly different for the two groups. On the basis of these results, the hypothesis of no difference between the two groups is rejected.

Table 3. Univariate Results for Hypothesis 1-B

Variables	Hypothesis Mean Sq.	Univariate F	P Less Than
Normal Nutrition	40501.2	89.9	.0001*
Maternal-Child Nursing	34.0	0.1	.8271
Nursing of Children	1026.7	1.4	.2430
Psychiatric Nursing	12227.9	17.9	.0001*
Public Health Nursing	15917.6	26.0	.0001*

*Specifies significance at the .01 level.

Hypothesis 2

U.S.F. graduates of the new curriculum (1969 and 1970) will not differ significantly from U.P. graduates of their new curriculum (1971 and 1972) on State Board Test Pool and National League for Nursing examinations.

Since both schools of nursing are located in urban, religious, private universities, and since the stated objectives and teaching methods of each curriculum are similar, it was expected that the examination scores of the graduates of both schools would be comparable.

Hypothesis 2-A

Comparisons of mean scores on State Board Test Pool examinations were made between the first two classes of graduates to complete the new program at U.S.F. (1969 and 1970) and the first two classes of graduates to complete the integrated program at U.P. (1971 and 1972). The expectation was that there would be no difference in the mean scores of the two groups on the five examinations. Vectors of means for the two groups were compared using a one-way multivariate analysis of variance (Table 4).

Table 4. Comparison of Scores on State Board Test Pool Examinations: U.S.F. Seniors (1969 and 1970) and U.P. Seniors (1971 and 1972)

	U.S.F. (N = 129)		U.P. (N = 29)			
Examinations	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
Med. Nsg.	537.82	89.52	471.79	76.79	13.52	.0004*
Surg. Nsg.	519.22	91.50	458.45	82.41	10.83	.0013*
Obs. Nsg.	564.55	96.65	471.34	83.71	23.05	.0001*
Nsg. of Child.	529.94	94.14	471.00	90.67	9.40	.0026*
Psych. Nsg.	575.44	80.61	507.45	70.03	17.62	.0001*

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors

$F_{5,152} = 5.4524$ P less than .0002

The U.S.F. students achieved higher mean scores on all five of the examinations. The difference in mean scores is statistically significant at or beyond the .01 level of probability on all five of the examinations. The difference between the two mean score vectors of five tests is statistically significant at the .0002 level of probability. In sum, the students completing the program at U.S.F. achieved significantly higher mean scores on all five State Board Test Pool examinations. Thus, Hypothesis 2-A is rejected.

Hypothesis 2-B

Comparisons on NLN examinations were made between the graduates of the first two classes to complete the new program at U.S.F. (1969 and 1970) and the first two classes of graduates of the integrated curriculum at U.P. (1971 and 1972). It was expected that there would be no difference between the mean scores of the two groups. Vectors of means computed on the examinations for the U.S.F. and U.P. students were compared using a one-way multivariate analysis of variance (Table 5).

The multivariate F statistic computed to test for equality of mean vectors was 33.6. This was significant at the .01 level. Thus, the means

are not equal over the two groups. When looking at the F's computed for each variable using univariate analysis of variance procedures, the F-ratios were significantly different with the exception of the Medical/Surgical examination. These findings contradict the hypothesis. U.P. students scored significantly higher than U.S.F. students on the Normal Nutrition examination. U.S.F. students were superior on the Maternal-Child Nursing, Nursing of Children, and Psychiatric Nursing examinations.

Table 5. Comparison of Scores on NLN Examinations: U.S.F. Seniors (1969 and 1970) and U.P. Seniors (1971 and 1972)

	U.S.F. (N = 89)		U.P. (N = 29)		Univariate	P Less
Examinations	Mean	S.D.	Mean	S.D.	F	Than
Normal Nutrition	20.3	15.8	52.2	27.5	59.6	.0001*
Maternal-Child Nursing	57.5	25.8	29.2	23.8	27.2	.0001*
Nursing of Children	48.9	26.6	26.3	25.6	16.1	.0002*
Medical/Surgical Nursing (Knowledge)	53.2	34.4	54.1	27.1	0.0	.9007
Medical/Surgical Nursing (Application)	49.4	34.8	60.4	27.4	2.4	.1207
Psychiatric Nursing	61.3	26.9	33.6	24.3	24.2	.0001*

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors
33.6 P less than .0001

Summary of Hypotheses 1 and 2 Findings

The investigators had assumed that U.S.F. graduates of the old curriculum (1965-1969) would be like the graduates of the new curriculum (1969-1972) in the scores they made on State Board Test Pool and National League for Nursing examinations. In a word, the statistical tests of difference on the measured variables indicated students who were taught by the old curriculum achieved significantly higher mean scores on all five of the State Board Test Pool examinations as well as on three of the five NLN examinations. Thus, the assumption of no difference is rejected; the old curriculum did a better

job of preparing students specifically for the examinations, partly because, no doubt, the tests were designed in terms of the expectations of traditional curriculums rather than those of new, innovative, or integrated programs.

It had been assumed that graduates of the U.S.F. and U.P. programs would perform comparably on State Board Test Pool and National League for Nursing examinations because they had experienced similar educational programs in similar environmental settings. The findings of the multivariate analysis of variance for the five State Board Test Pool examinations for the U.S.F. Classes of 1969 and 1970 and for the 1971 and 1972 classes at U.P. reveal that the U.S.F. students achieved significantly higher mean scores on all five of the examinations. Significant differences also were found between the same two groups on the NLN examinations. In this comparison, one-way multivariate analysis of variance revealed that U.P. students scored significantly higher in the Normal Nutrition examination, while U.S.F. students scored significantly higher than U.P. students on the Maternal-Child, Nursing of Children, and Psychiatric Nursing examinations. The difference between the two groups on the Medical/Surgical Nursing examination was not statistically different. Thus, it would appear that there are factors, either in differences in students themselves, in faculty, or in the preparing programs, contributing to these differences in achievement. Since the investigators were careful to control for the newness of the programs by testing only the first two years' graduates of each new curriculum, it seems reasonable to assume that the early trials and efforts of faculty working with integrated curriculums was not a factor contributing to the differences.

CHAPTER 2

HYPOTHESES 3 AND 4

Hypothesis 3

There will be no significant pre-curriculum test differences between beginning students in nursing at U.S.F. (1971 and 1972) and U.P. (1971 and 1972) in the measurement of the following five variables:

a. Demographic background
b. Academic ability
c. Personality characteristics
d. Leadership qualities
e. Personal preferences

Since it was assumed that similar students were admitted to the nursing program at both U.S.F. and U.P. and that they possessed comparable professional motivations, it was expected that the two groups of students would be alike in these measurable respects. This hypothesis was reformulated into six research hypotheses for statistical treatment. Each of these will be presented in turn.

Hypothesis 3-A.1

The research hypothesis stated that seniors at U.S.F. (1971 and 1972) would be the same age as those at U.P. The statistical statement of the hypothesis tested the mean age difference between seniors at U.S.F. and U.P. for the combined years 1971 and 1972. The expectation was that the results would not be significant, thus indicating that the students from the two universities are comparable. A one-way analysis of variance was used to make the comparison. The results are recorded in Table 6.

Table 6. Comparison of Mean Ages of Seniors: U.S.F. and U.P. (1971 and 1972)

U.S.F. (N = 175)		U.P. (N = 30)			
Mean Age	S.D.	Mean Age	S.D.	F	P Less Than
22.9	4.1	22.2	2.9	.87	.3529

The results are not significant. The average age of seniors is approximately 22.8 years. The age spread is greater for U.S.F. than U.P. seniors. This may be explained by the number of R.N. students at U.S.F. included in the Classes of 1971 and 1972. Mean age, however, shows no difference.

Hypothesis 3-A.2

The research hypothesis stated that seniors at U.S.F. (1971 and 1972) have the same demographic background as those at U.P. Again, the investigators expected to accept the statistical statement of the hypothesis.

The seniors were compared according to Citizenship, Ethnic Group, Religion, Religious Order, Marital Status, Community Size, and Social Class of Father. Each variable was analyzed separately by means of a chi-square test for two independent samples. The observed distribution breaks for each of the variables are presented in Table 7.

The only significant result is in the variable Community Size. The distribution break indicates that U.S.F. students tend to come from large urban centers while U.P. students were drawn more from rural areas. With this one exception, seniors at U.S.F. and U.P. were similar in demographic background.

Table 7. Chi-Square Comparisons of Demographic Data: U.S.F. and U.P. Seniors (1971 and 1972)

Citizenship

	USF	UP
USA	170	29
Other	5	1

$X_1^2 = 0$

Ethnic Group

	USF	UP
Cauc	164	26
Other	11	4

$X_1^2 = 2.47$

Religion

	USF	UP
RC	154	24
P	12	3
Other	9	3

$X_2^2 = 1.36$

Religious Order

	USF	UP
Yes	17	0
No	158	30

$X_1^2 = 2.44$

Marital Status

	USF	UP
Single	147	23
Married	27	6
Other	1	1

$X_2^2 = 0.93$

Community Size

	USF	UP
Metro	61	4
Subur	32	3
Lg Urb	22	3
Sm Urb	46	10
Rural	14	10

$X_4^2 = 24.72$ which is significant at the 0.01 level

Social Class of Father[1]

	USF	UP
1	22	5
2	32	2
3	58	13
4	50	8
5	13	2

$X_4^2 = 3.86$

Hypothesis 3-B

The research hypothesis established the expectation that U.S.F. and U.P. seniors (1971 and 1972) would have had the same academic ability when measured by the CEEB-SAT examination taken as high school seniors. Therefore,

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[1]Social Class 1 is the highest on the basis of occupation and education; 5 is the lowest.

the investigators expected to accept the statistical hypothesis.

CEEB SAT Verbal and Math scores were analyzed using one-way multivariate analysis of variance. Sample sizes, means, standard deviations, and F statistics are reported in Table 8.

Table 8. Comparison of CEEB SAT Scores: U.S.F. and U.P. Seniors (1971 and 1972)

	U.S.F. (N = 151)		U.P. (N = 29)			
Examinations	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
Verbal	507.2	89.6	496.8	94.8	0.3	0.57
Math	491.6	98.0	461.6	93.6	2.3	0.13

Multivariate F-Ratio for Equality of Mean Vectors
1.3 P less than 0.3

The mean scores of the Verbal and Math portions of the CEEB SAT did not differ significantly for U.S.F. and U.P. students, although U.S.F. students did score slightly higher on both parts of the examination. Thus, the research hypothesis is accepted.

Hypothesis 3-C

The research hypothesis established the expectation that there would be no differences in the personality characteristics of students entering the professional curriculum at either U.S.F. or U.P. Again, the data were collected from seniors who graduated in 1971 and 1972. The investigators expected to accept the statistical statement of the hypothesis, thus demonstrating that the two groups were similar. Vectors of means were compared using a one-way multivariate analysis of variance. Table 9 summarizes the analysis.

Since the multivariate F statistic for 14 and 177 degrees of freedom is very low, the hypothesis of no difference between the personality characteristics of the two groups, as measured by the OPI, is accepted. Thus, the groups were comparable in their personality characteristics. Visual

observation between pairs of means shows that U.S.F. and U.P. seniors are remarkably similar upon entrance to the professional component of the program. The only scale approaching significance is Religious Orientation (RO). In this instance, U.P. seniors score slightly higher than U.S.F. A high score indicates that students tend to reject conventional religious beliefs. The IDC scores also showed no difference.

Table 9. Pre-Curricular Comparisons of OPI Scores: U.S.F. and U.P. Seniors (1971 and 1972)

	U.S.F. (N = 163)		U.P. (N = 29)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
TI	48.3	8.1	48.8	8.3	0.1	0.77
TO	45.5	8.9	46.9	9.3	0.6	0.44
Es	52.1	8.3	53.1	9.1	0.3	0.56
Co	48.5	9.9	46.5	10.8	0.9	0.34
Au	52.7	7.4	52.1	8.5	0.2	0.70
RO	46.6	6.2	49.3	7.3	4.5	0.04
SE	51.7	9.1	51.4	8.6	0.0	0.35
IE	48.2	9.3	49.0	9.6	0.2	0.66
PI	56.1	9.5	56.3	10.1	0.0	0.94
AL	51.2	9.7	52.7	9.6	0.5	0.46
Am	58.8	8.3	56.9	8.6	1.3	0.25
PO	48.5	7.9	50.0	7.5	0.9	0.36
MF	44.3	7.3	43.3	7.1	0.5	0.47
RB	51.9	10.3	51.7	11.4	0.0	0.92

Multivariate F-Ratio for Equality of Mean Vectors
1.28 P less than 0.23

Hypothesis 3-b

The research hypothesis established the expectation that there would be no difference in leadership ability, as measured by the LAE, between beginning nursing students at U.S.F. and U.P. The hypothesis was tested on the classes completing the two programs in 1971 and 1972, using one-way multivariate analysis of variance. The findings are presented in Table 10.

For a multivariate F statistic of 0.77, as shown in Table 10, the hypothesis of no difference in leadership ability between U.S.F. and U.P.

students is accepted: i.e., mean scores for the two groups are quite similar across the three scales--Laissez Faire (LF), Democratic-Cooperative (DC), and Autocratic-Submissive (AS)--when beginning the professional component of their programs.

Table 10. Pre-Curricular Comparisons of LAE Scores: U.S.F. and U.P. Seniors (1971 and 1972)

	U.S.F. (N = 113)		U.P. (N = 30)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
LF	38.7	28.8	39.6	20.9	0.02	0.88
DC	35.5	7.1	34.9	6.1	0.23	0.63
AS	25.3	12.5	28.4	12.1	1.57	0.21

Multivariate F-Ratio for Equality of Mean Vectors
0.77 P less than 0.51

This finding also was confirmed by using univariate analysis of variance of the Total Score, i.e., the "Decision Pattern-Social Climate Structure" score of the LAE. The mean scores for the two groups again are similar. Thus, the research hypothesis is accepted; there is no statistically significant difference in leadership ability, as measured by the LAE, between beginning nursing students at U.S.F. and U.P.

Hypothesis 3-E

U.S.F. and U.P. seniors (1971 and 1972) also were compared at the pre-professional curricular point by using the EPPS. Scores on each of the sixteen scales for each individual were analyzed using one-way analysis of variance. Comparisons were made between the vector means of the two groups. It was expected that the null hypothesis would not be rejected and that the two groups would be similar. Results are summarized in Table 11.

The decision rule is to reject the null hypothesis of no difference in personal preference between the two groups if F is greater than $F_{1,191}$

(.95) = 3.89. Since the computed value of F is 0.67, the statistical hypothesis is accepted; the means of the two groups on the scale scores of the EPPS are not statistically different. There is no difference between beginning U.S.F. and U.P. nursing students in personal preference, as measured by the EPPS.

Table 11. Pre-Curricular Comparisons of EPPS Scores: U.S.F. and U.P. Seniors (1971 and 1972)

	U.S.F. (N = 163)		U.P. (N = 29)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
Ach	47.3	10.5	46.3	8.8	0.27	0.61
Def	47.6	9.9	47.3	10.3	0.02	0.89
Ord	46.8	9.6	48.8	8.6	1.13	0.29
Exh	47.6	9.2	49.2	11.4	0.69	0.41
Aut	48.9	9.3	49.9	9.6	0.28	0.60
Aff	53.3	10.0	53.0	10.1	0.03	0.86
Int	51.5	9.5	52.2	8.4	0.13	0.72
Suc	54.5	9.9	51.4	8.7	2.38	0.12
Dom	47.1	10.3	45.2	9.8	0.85	0.36
Aba	49.2	9.2	50.3	10.2	0.35	0.56
Nur	57.2	9.7	58.1	10.1	0.25	0.62
Chg	50.0	9.4	49.3	10.2	0.13	0.72
End	47.8	9.5	48.3	7.8	0.08	0.78
Het	49.9	10.4	51.2	9.7	0.44	0.51
Agg	50.6	9.6	49.1	8.7	0.68	0.41
Con	51.6	9.9	51.0	8.9	0.07	0.79

Multivariate F-Ratio for Equality of Mean Vectors
0.67 P less than 0.82

Summary of Hypothesis 3 Findings

The investigators had assumed that beginning students in the two schools of nursing would be alike in the five measured variables: 1) demographic background, 2) academic ability, 3) personality characteristics, 4) leadership ability, and 5) personal preference. In a word, the statistical tests of difference on the measured variables indicated there was none. In age, citizenship, ethnic origin, religious affiliation, religious order, marital status, social class of father, academic potential, personality

characteristics, leadership ability, and personal preference, the two groups of students were remarkably identical. The lone exception is that U.S.F. students tended to come more from urban centers and U.P. students more from rural areas. Thus, any significant findings which later may be found in curriculum preferences when these students graduate will need to be attributed to other than demographic background, academic and leadership abilities, personality characteristics, or personal preferences.

Hypothesis 4

There will be no significant post-curriculum test differences among graduates in nursing at U.S.F. (1969 and 1970) and U.P. (1971 and 1972) in:

a. Personality characteristics
b. Leadership ability
c. Personal preferences

It had been assumed that similar students experiencing comparable learnings directed towards corresponding goals would manifest identical change (or lack of change) as a result of their nursing curriculum. For purposes of this hypothesis, data were collected from the first two classes to complete the new program at each institution, thus controlling for any variance which might be attributed to refinement of curricular procedures. The assumption was that students entering the program at U.S.F. (1965 and 1966) were similar to those entering U.P. in 1967 and 1968. The hypothesis was subdivided into three research hypotheses for purposes of analysis.

Hypothesis 4-A

Using the OPI at the end of the senior year, U.S.F. students (1969 and 1970) were compared with U.P. students (1971 and 1972). Means of the two groups on the fourteen scales were compared using one-way multivariate analysis of variance. The expectation was that the two groups would be similar.

Results of the analysis are presented in Table 12.

Table 12. Post-Curricular Comparisons of OPI Scores: U.S.F. Seniors (1969 and 1970) and U.P. Seniors (1971 and 1972)

	U.S.F. (N = 163)		U.P. (N = 29)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
TI	46.4	9.2	49.9	8.3	3.37	0.07
TO	44.2	10.3	45.7	7.9	0.54	0.46
Es	50.1	9.7	53.7	9.5	3.28	0.07
Co	48.3	10.6	54.6	10.4	8.04	0.01*
Au	56.5	9.5	60.0	6.6	3.44	0.06
RO	49.0	8.1	51.4	6.7	2.14	0.15
SE	51.4	9.4	49.1	7.1	1.59	0.21
IE	48.5	10.3	56.1	6.9	14.27	0.00*
PI	58.1	10.0	54.4	7.0	3.46	0.07
AL	54.0	9.5	51.7	7.3	1.49	0.22
Am	58.1	9.3	55.0	9.4	2.58	0.11
PO	45.8	8.7	44.7	6.7	0.39	0.53
MF	43.7	8.2	43.2	8.2	0.10	0.76
RB	50.0	11.3	46.8	11.8	1.76	0.19

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors
2.32 P less than 0.01

Since an F value equal to or greater than 2.32 will occur by chance less than one percent of the time, the hypothesis of no mean difference between the groups is rejected. Nevertheless, probably because of the sample size at U.P., the groups appear to be more alike than different. U.S.F. seniors (1969 and 1970) and U.P. seniors (1971 and 1972) are similar, except on two scales of the OPI. Checking the univariate analysis of variance, U.P. seniors obtained statistically significant higher mean scores than U.S.F. on the Complexity (Co) and Impulse Expression (IE) scales. A high score on these scales describes persons generally as "free and loose." Assuming the probability of a type one error to be less than or equal to 0.05 for all univariate tests, these are the only two scales which produced a statistically significant result. On the Complexity (Co) scale, the mean for U.P. seniors was 54.6, while

for U.S.F. it was 48.3. With respect to the Impulse Expression (IE) scale, the mean score for U.P. was 56.1, and for U.S.F. it was 48.5. Variability of scores on the fourteen scales was quite consistent across both groups. The IDC scores showed no difference. For all intents and purposes, the two groups were similar at the end of their curricular experiences, as measured by the OPI.

Hypothesis 4-B

An expectation was that U.S.F. seniors (1969 and 1970) would be similar to U.P. seniors (1971 and 1972) in leadership ability at the end of their professional curriculums. Using one-way multivariate analysis of variance, the statistical hypothesis was tested. The findings are presented in Table 13.

Table 13. Post-Curricular Comparisons of LAE Scores: U.S.F. Seniors (1969 and 1970) and U.P. Seniors (1971 and 1972)

	U.S.F. (N = 113)		U.P. (N = 30)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
LF	33.0	26.7	36.6	18.9	0.50	0.48
DC	38.0	5.8	38.0	5.0	0.00	0.99
AS	23.7	13.8	22.1	11.8	0.33	0.56

Multivariate F-Ratio for Equality of Mean Vectors
0.29 P less than 0.83

The expectation had been to accept the statistical hypothesis. The small F value confirms that there is no significant difference between the two groups on a given scale of the LAE. This finding also was confirmed by using univariate analysis of variance of the Total Score, i.e., the "Decision Pattern or Social Climate Structure" score of the LAE. The mean scores for the two groups again are similar. Thus, the research hypothesis is accepted; there is no statistically significant difference in leadership ability, as measured by the LAE, between graduating nursing students at U.S.F. and U.P.

Hypothesis 4-C

This is a third hypothesis comparing U.S.F. seniors (1969 and 1970) and U.P. seniors (1971 and 1972). Their scores on the sixteen scales of the EPPS were compared at the end of the senior year, using one-way multivariate analysis of variance. The results are presented in Table 14.

Table 14. Post-Curricular Comparisons of EPPS Scores: U.S.F. Seniors (1969 and 1970) and U.P. Seniors (1971 and 1972)

	U.S.F. (N = 163)		U.P. (N = 29)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
Ach	48.2	10.4	49.3	10.7	0.30	0.58
Def	46.0	9.5	42.1	8.5	4.17	0.04
Ord	47.0	11.0	48.0	10.9	0.17	0.67
Exh	47.0	10.3	48.4	9.8	0.43	0.52
Aut	51.5	10.3	55.5	9.1	3.83	0.05
Aff	50.0	10.0	48.6	8.2	0.49	0.49
Int	50.7	10.0	51.4	9.7	0.15	0.70
Suc	52.6	10.4	51.2	8.8	0.49	0.48
Dom	50.0	11.2	48.2	10.4	0.59	0.44
Aba	44.3	11.0	44.6	6.8	0.02	0.90
Nur	54.2	10.6	52.8	11.1	0.36	0.55
Chg	50.6	10.8	54.0	10.0	2.49	0.12
End	47.1	10.4	46.4	7.4	0.13	0.72
Het	52.4	12.0	55.9	11.7	2.01	0.16
Agg	51.1	9.9	51.6	9.1	0.05	0.82
Con	50.3	10.6	49.1	8.1	0.37	0.55

Multivariate F-Ratio for Equality of Mean Vectors
0.99 P less than 0.47

The null hypothesis is that there is no statistically significant difference between the means of the two groups. Since the probability level of the computed F statistic is 0.47, the hypothesis is accepted. No mean differences were found. U.S.F. seniors who graduated in 1969 and 1970 were similar to U.P. students who graduated in 1970 and 1971, as measured by the EPPS.

Summary of Hypothesis 4 Findings

The graduates of the first two years of the integrated curriculums

at U.S.F. and U.P. were not, for all intents and purposes, significantly different in either personality characteristics, as measured by the OPI; in leadership ability, as measured by the LAE; or in personal preference, as measured by the EPPS. Thus, the investigators' assumption that there would be no difference was confirmed.

If, indeed, significant findings are discovered in U.S.F. students as they move from sophomore to senior status, it reasonably could be assumed that these differences might be due to their curricular experiences and not due to maturation or the fact that these students are atypical of college or professional nursing students in either personality, leadership, or personal preference.

CHAPTER 3

HYPOTHESES 5.1 AND 5.2

Hypothesis 5.1

> The U.S.F. Class of 1972 will not show significant pre-curricular test differences from the Class of 1973 on personality characteristics, leadership ability, and personal preference, nor will they show significant post-curricular test differences from the Class of 1969 on the same three variables.

Since the investigators assumed that the U.S.F. Class of 1972 was similar to other classes admitted to the School of Nursing, it was expected that a comparison of the freshmen of 1972 with those of 1973 and a comparison of the seniors of 1972 with those of 1969 would show no difference, thus providing generalizability to the findings from the data collated on the Class of 1972. For purposes of analysis, the hypothesis was divided into two categories, each with three research hypotheses.

Hypothesis 5.1-A

A comparison was made between U.S.F. freshmen of the Classes of 1972 and 1973, using the OPI. As shown in Table 15, there is a statistically significant difference in the scale score Religious Orientation (RO), indicating that, as freshmen, the Class of 1973 was more skeptical of religious values and less conservative in its beliefs than the Class of 1972 as freshmen. On all other scales including the IDC, the two groups were the same. Thus, the research hypothesis that the two groups would show no difference

in personality characteristics, as measured by the OPI, essentially was substantiated; the Classes of 1972 and 1973 as freshmen were alike.

Table 15. Comparison of Pre-Curricular OPI Scores: U.S.F. Freshmen, Classes of 1972 and 1973

	Class of 1972 (N = 77)		Class of 1973 (N = 82)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
TI	48.23	8.67	45.78	8.04	3.4262	.0661
TO	47.34	8.51	44.94	8.55	3.1410	.0783
Es	51.44	7.67	51.39	7.84	0.0017	.9669
Co	47.79	10.12	48.91	8.83	0.5573	.4565
Au	51.95	7.53	53.07	7.82	0.8527	.3572
RO	45.95	6.27	50.57	6.26	21.6442	.0001*
SE	52.52	9.56	50.63	8.96	1.6476	.2012
IE	47.19	8.10	50.29	10.37	4.4045	.0375
PI	55.77	9.32	55.38	9.72	0.0659	.7977
AL	51.91	9.13	50.35	9.51	1.1048	.2949
Am	59.83	8.55	56.24	9.68	6.1076	.0146
PO	48.61	8.71	50.43	8.12	1.8528	.1755
MF	44.74	7.24	44.40	6.46	0.0966	.7564
RB	53.27	9.11	49.48	9.23	6.8049	.0100*

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors
$F_{14,144} = 3.3313$ P less than .0002

A second comparison was made between U.S.F. Classes of 1972 and 1973 as freshmen, using the LAE. As shown in Table 16, they were the same; none of the differences between mean scale scores is statistically significant at the .01 level. The research hypothesis that the two groups would show no difference in leadership ability, as measured by the LAE, is substantiated; the freshmen of the Classes of 1972 and 1973 were alike.

Table 16. Comparison of Pre-Curricular LAE Scores: U.S.F. Freshmen, Classes of 1972 and 1973

	Class of 1972 (N = 76)		Class of 1973 (N = 83)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
LF	43.47	29.84	50.52	27.74	2.3797	.1250
DC	33.53	6.66	32.46	6.75	1.0070	.3172
AS	28.21	12.70	27.57	12.37	0.1049	.7465

Multivariate F-Ratio for Equality of Mean Vectors
$F_{3,155} = .8359$ P less than .4761

A third comparison was made between U.S.F. Classes of 1972 and 1973 as freshmen, using the EPPS. As shown in Table 17, there is no statistically significant difference. Thus, the research hypothesis that the two groups would show no difference in personal preferences, as measured by the EPPS, is accepted; the freshmen of the Classes of 1972 and 1973 were alike.

Table 17. Comparison of Pre-Curricular EPPS Scores: U.S.F. Freshmen, Classes of 1972 and 1973

	Class of 1972 (N = 78)		Class of 1973 (N = 83)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
Ach	47.36	10.77	48.36	8.83	0.4191	.5184
Def	48.08	11.06	46.69	9.33	0.7465	.3889
Ord	47.99	9.97	47.64	10.47	0.0467	.8292
Exh	47.40	8.93	47.88	10.17	0.1016	.7504
Aut	47.50	8.81	49.71	10.47	2.0889	.1504
Aff	55.33	9.32	51.81	10.44	5.0859	.0255
Int	49.47	9.38	48.54	9.11	0.3877	.5344
Suc	54.82	10.56	52.20	10.78	2.4135	.1223
Dom	45.33	11.03	45.45	10.43	0.0044	.9471
Aba	50.68	8.44	49.73	9.44	0.4462	.5052
Nur	59.05	8.27	55.75	9.14	5.7571	.0176
Chg	48.71	9.41	52.08	8.44	5.7684	.0175
End	47.74	8.68	46.86	8.56	0.4274	.5143
Het	50.46	10.83	51.96	11.40	0.7329	.3933
Agg	49.60	8.79	51.01	9.01	1.0076	.3170
Con	51.33	8.92	49.88	10.95	0.8466	.3590

Multivariate F-Ratio for Equality of Mean Vectors
$F_{16,144} = .9598$ P less than .5037

Hypothesis 5.1-B

A comparison was made between U.S.F. seniors of the Classes of 1969 and 1972, using the OPI. As shown in Table 18, there is a statistically significant difference on the Autonomy (Au) scale, indicating that seniors of the Class of 1972 were more liberal and non-authoritarian in their thinking and preferred to function independent of "authority imposed by social institutions." On all other scales, the two groups were similar. The difference between the post-test mean score vectors on the OPI for the Classes of 1969 and 1972 is statistically significant beyond the .05 level of probability of a type one error. The IDC score showed no difference. Thus, the research hypothesis that the two groups would show no difference in personality characteristics, as measured by the OPI, essentially is substantiated. With the one exception, the seniors of the Classes of 1969 and 1972 were alike.

Table 18. Comparison of Post-Curricular OPI Scores: U.S.F. Seniors, Classes of 1969 and 1972

	Class of 1969 (N = 45)		Class of 1972 (N = 77)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
TI	47.02	8.52	48.48	8.03	0.8959	.3458
TO	43.69	8.85	43.71	8.09	0.0003	.9872
Es	51.49	8.53	53.31	7.85	1.4371	.2330
Co	47.96	9.90	50.25	10.03	1.4969	.2236
Au	54.24	7.48	59.29	6.82	14.4410	.0003*
RO	48.67	7.19	50.00	6.64	1.0770	.3015
SE	51.84	7.96	51.01	9.43	0.2470	.6202
IE	48.56	9.25	52.16	9.77	4.0106	.0475
PI	57.40	8.69	57.47	10.46	0.0013	.9710
AL	52.89	8.90	51.01	10.46	1.0163	.3155
Am	57.93	7.73	58.52	9.29	0.1275	.7217
PO	46.69	7.62	45.08	7.52	1.2910	.2582
MF	42.76	7.37	44.27	6.89	1.3089	.2549
RB	49.02	10.10	48.56	9.73	0.0627	.8027

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors
$F_{14,107} = 2.2358$ P less than .0107

A second comparison was made between U.S.F. seniors of the Classes of 1969 and 1972, using the LAE. As shown in Table 19, the two groups were similar on two of the three scales. There is a statistically significant difference in the Autocratic-Submissive (AS) scale, indicating that the seniors of the Class of 1972 were more likely to make decisions on their own. The research hypothesis that the two groups would show no difference in leadership ability, as measured by the LAE, is substantiated. With the one exception, the seniors of the Class of 1972 were similar to the seniors of the Class of 1969 in leadership ability.

Table 19. Comparison of Post-Curricular LAE Scores: U.S.F. Seniors, Classes of 1969 and 1972

	Class of 1969 (N = 54)		Class of 1972 (N = 73)			
Scales	Mean	S.D.	Mean	S.D.	Univariate F	P Less Than
LF	33.57	25.34	32.58	29.02	0.0409	.8401
DC	37.26	5.65	39.10	6.63	2.6981	.1030
AS	24.74	11.66	18.36	12.82	8.3078	.0047*

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors
$F_{3,123} = 3.0152$ P less than .0327

A third comparison was made between U.S.F. seniors of the Classes of 1969 and 1972, using the EPPS. As shown in Table 20, the difference between the post-curricular test mean score vectors of the EPPS for the Classes of 1969 and 1972 is not statistically significant at the .05 level of probability of a type one error. Thus, the research hypothesis that the two groups would show no difference in personal preference, as measured by the EPPS, is accepted. In terms of their concern for their own basic human needs, the seniors of the Classes of 1969 and 1972 were alike.

Table 20. Comparison of Post-Curricular EPPS Scores: U.S.F. Seniors, Classes of 1969 and 1972

Scales	Class of 1969 (N = 58) Mean	S.D.	Class of 1972 (N = 79) Mean	S.D.	Univariate F	P Less Than
Ach	47.03	9.06	49.08	10.10	1.4885	.2246
Def	45.93	8.76	43.90	8.67	1.8231	.1793
Ord	47.47	9.73	45.95	8.76	0.9115	.3415
Exh	46.09	7.65	47.04	8.87	0.4318	.5123
Aut	52.90	8.41	50.81	9.45	1.7866	.1836
Aff	46.69	10.26	51.63	9.08	1.3723	.2435
Int	51.90	8.46	49.66	8.93	2.1973	.1406
Suc	52.92	8.54	55.54	11.84	2.0701	.1526
Dom	49.86	10.65	47.77	9.87	1.4019	.2385
Aba	46.83	10.37	44.37	10.21	1.9171	.1685
Nur	53.47	10.09	56.27	8.78	2.9975	.0857
Chg	49.97	8.90	50.76	9.59	0.2435	.6226
End	46.83	9.47	46.72	8.13	0.0049	.9441
Het	54.97	9.79	56.58	10.21	0.8681	.3532
Agg	52.29	9.11	52.06	9.43	0.0204	.8867
Con	49.53	10.74	50.25	9.10	0.1789	.6730

Multivariate F-Ratio for Equality of Mean Vectors
$F_{16,120} = 1.3571$ P less than .1750

Summary of Hypothesis 3.1

The U.S.F. freshmen of the Classes of 1972 and 1973 were compared before they embarked on the professional component of the curriculum, using the OPI, the LAE, and the EPPS. Were these beginning nursing students the same? The investigators had expected both groups to be similar as freshmen on the three variables. The statistical results indicate that the hypothesis is substantiated. Freshmen in the Class of 1972 were the same as those of 1973 on thirteen of the fourteen scales of the OPI, two of the three scales of the LAE, and all scales of the EPPS. Essentially, these beginning nursing students were similar.

Similarly, the U.S.F. seniors of the Classes of 1969 and 1972 were compared after completing the professional component of the curriculum, using the same three instruments. Were these graduating seniors in nursing the

same? Here the investigators were speculating that while the seniors might be similar, there would be some minor differences as a result of increased sophistication of the faculty in working with the integrated curriculum and devising teaching strategies. The statistical results show that, for all intents and purposes, this hypothesis also is substantiated. The two groups were similar on all but one scale of the OPI, all but one of the LAE, and on all scales of the EPPS. The two differences, though minor in the "hypothesis sense," are worth noting in a "curriculum evaluation sense." The 1972 seniors appeared to be more autonomous in their thinking and more independent in their leadership pattern. This might be explained by "the times," by maturation, or by the strengthening of the leadership thread of the integrated curriculum.

Hypothesis 5.2

> At the end of a professional curriculum in nursing education, students at U.S.F. and U.P. will have changed in their personality characteristics, leadership ability, and personal preference.

Since the investigators assumed that the goal-oriented learning experiences of a professional nurse education program would have a definite impact on students, it was expected that the students might change in certain personality features measured before and after exposure to the professional component of the curriculum. This hypothesis was tested with the U.S.F. and U.P. Classes of 1972, the target populations.

Hypothesis 5.2-A

A first research hypothesis stated that students in the U.S.F. Class of 1972 would change in their personality characteristics by the end of the program, as measured by the OPI. As shown in Table 21, there is a significant

difference between pre and post-curricular test scores on the following scales of the OPI:

TO (Theoretical Orientation)
Es (Estheticism)
Co (Complexity)
Au (Autonomy)
RO (Religious Orientation)
IE (Impulse Expression)
PI (Personal Integration)
PO (Practical Outlook)

Table 21. Comparison of Pre and Post-Curricular OPI Scores: U.S.F. Seniors, 1972 (N = 74)

Scales	Pre-Curricular Mean	Post-Curricular Mean	Univariate F	P Less Than
TI	47.96	48.58	0.5261	.4706
TO	46.23	49.65	12.4676	.0008*
Es	59.70	58.73	7.3432	.0084*
Co	46.92	43.96	8.8779	.0040*
Au	52.26	51.18	103.1575	.0001*
RO	48.65	44.84	30.6804	.0001*
SE	51.15	53.20	1.6291	.2059
IE	46.92	51.78	26.4115	.0001*
PI	44.53	44.31	7.0467	.0098*
AL	47.59	50.27	0.1380	.7114
Am	55.51	57.77	0.9598	.3305
PO	52.89	48.78	21.3331	.0001*
MF	52.18	59.11	0.0783	.7805
RB	51.58	51.19	16.6877	.0002

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors
$F_{14,60} = 13.1350$ P less than .0001

In Theoretical Orientation (TO) and Impulse Expression (IE), the change was an increase on the post-curricular test score, demonstrating shifts in the direction the investigators expected. An increase in Theoretical Orientation indicates that students are more apt to endorse scientific reflections, enjoy speculating about problems "which have challenged experts," like doing assignments requiring original research, or prefer the "man of

ideas to the practical man." An increase in Impulse Expression indicates students are more apt to act on the spur of the moment, express themselves freely and openly, and value sensual reactions.

In Religious Orientation (RO) and Practical Outlook (PO), the change was a decrease in the post-curricular test scores, also indicating shifts in the expected direction. A decrease in Religious Orientation indicates students who now hold religious beliefs based on understanding rather than dogma; one in Practical Outlook indicates persons who are more apt to think "the best theory is one that has the best practical application" and that "it is the responsibility of intelligent leadership to maintain the established order."

The statistically significant change in Estheticism (Es), Complexity (Co), Autonomy (Au), and Personal Integration (PI) was not in keeping with the direction of change which might have been expected from the known objectives and characteristics of the integrated curriculum. There was no change in the IDC. On the basis of the score changes on the OPI, the research hypothesis is accepted.

A second research hypothesis was that U.S.F. students (Class of 1972) would change in their leadership ability by the end of the program, as measured by the LAE. As shown in Table 22, there is a statistically significant difference between the pre and post-curricular test scores on the three scales of the LAE. The changes consist of decreases in the mean scores on the Laissez Faire (LF) and Autocratic-Submissive (AS) scales and an increase in the mean score on the Democratic-Cooperative (DC) scale. This is precisely the change in leadership ability that the faculty expected. The second research hypothesis is accepted.

Table 22. Comparison of Pre and Post-Curricular LAE Scores: U.S.F. Seniors, 1972 (N = 70)

Scales	Pre-Curricular Mean	Post-Curricular Mean	Univariate F	P Less Than
LF	42.30	33.37	7.2910	.0088*
DC	33.69	38.86	43.2890	.0001*
AS	28.00	18.80	27.8725	.0001*

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors
$F_{3,67} = 15.0234$ P less than .0001

A third research hypothesis was that U.S.F. students (Class of 1972) would change in their personal preference by the end of the program, as measured by the EPPS. As shown in Table 23, there is a statistically significant difference between pre and post-curricular test scores on the following seven scales of the EPPS:

Def (Deference)
Ord (Order)
Aut (Autonomy)
Aff (Affiliation)
Aba (Abasement)
Nur (Nurturance)
Het (Heterosexuality)

By the time they graduated, the U.S.F. students apparently felt less of a need to be deferent, to affiliate with their peers, to be self-abasing and nurturant or sentimentally caring, and to prefer less structure and order. They had a greater need for autonomy, and were more interested in the opposite sex and in their future roles as mothers and homemakers. These changes were in the direction the faculty expected. The third research hypothesis of 5.2-A is accepted.

Table 23. Comparison of Pre and Post-Curricular EPPS Scores: U.S.F. Seniors, 1972 (N = 77)

Scales	Pre-Curricular Mean	Post-Curricular Mean	Univariate F	P Less Than
Ach	47.17	49.40	4.4500	.0382
Def	48.13	43.91	10.0174	.0023*
Ord	48.18	45.88	6.8199	.0109*
Exh	47.19	46.92	0.0638	.8014
Aut	47.57	50.56	10.0236	.0023*
Aff	55.22	51.77	10.1432	.0022*
Int	49.36	49.61	0.0410	.8402
Suc	54.90	55.34	0.1026	.7496
Dom	45.22	47.75	6.0135	.0165
Aba	50.84	44.58	32.5590	.0001*
Nur	59.06	56.27	7.2898	.0086*
Chg	48.56	50.84	3.6226	.0608
End	47.83	46.97	0.8525	.3588
Het	50.52	56.55	23.8819	.0001*
Agg	49.70	51.73	3.7839	.0555
Con	51.12	50.08	0.8476	.3602

*Specifies significance at the .01 level.

Multivariate F-Ratio for Equality of Mean Vectors
$F_{16,61} = 5.8320$ P less than .0001

Hypothesis 5.2-B

The research hypothesis stated that students at U.P. (Class of 1972) would change in their personality characteristics by the end of the program, as measured by the OPI. The results, using one-way multivariate analysis of variance, are shown in Table 24.

The difference between the pre and post-curricular mean score vectors of the OPI is not statistically significant at the .05 level of probability on a type one error. On the basis of this finding, the expectation that U.P. seniors would change in their personality characteristics, as measured by the OPI, was not confirmed. The research hypothesis is rejected.

Table 24. Comparison of Pre and Post-Curricular OPI Scores: U.P. Seniors, 1972 (N = 16)

Scales	Pre-Curricular Mean	Post-Curricular Mean	Univariate F	P Less Than
TI	50.13	48.19	2.1608	.1623
TO	49.63	44.25	25.1451	.0002
Ls	53.69	55.38	0.7861	.3893
Co	47.38	55.19	9.6217	.0073
Au	53.00	60.38	14.1927	.0019
RO	49.25	52.13	3.0160	.1030
SE	50.13	46.06	5.7329	.0296
IE	47.00	54.69	12.5580	.0030
PI	56.50	53.88	1.7449	.2064
AL	52.31	51.56	0.1287	.7248
Am	57.81	54.50	5.4928	.0333
PO	48.13	46.06	1.4320	.2501
MF	43.06	43.44	0.0642	.8035
RB	54.50	44.63	19.1559	.0006

Multivariate F-Ratio for Equality of Mean Vectors
$F_{14,2}$ = 8.3426 P less than .1121

A second research hypothesis was that U.P. students (Class of 1972) would change in their leadership ability by the time of graduation, as measured by the LAE. As shown in Table 25, the difference between the pre and post-curricular test mean score vectors on the LAE is not statistically significant at the .05 level of probability of a type one error. Hence, the research hypothesis is rejected; the U.P. students did not change in their leadership ability, as measured by the LAE.

Table 25. Comparison of Pre and Post-Curricular LAE Scores: U.P. Seniors, 1972 (N = 17)

Scales	Pre-Curricular Mean	Post-Curricular Mean	Univariate F	P Less Than
LF	34.18	37.06	0.5756	.4591
DC	36.12	38.00	2.1054	.1662
AS	27.59	22.32	1.8340	.1945

Multivariate F-Ratio for Equality of Mean Vectors
$F_{3,14}$ = 2.2669 P less than .1256

A third research hypothesis was that U.P. students (Class of 1972) would change in their personal preference by the end of the program, as measured by the EPPS. Table 26 indicates there is no statistically significant difference between pre and post-curricular test mean score vectors on the EPPS. Hence, the research hypothesis is rejected; the U.P. students did not change in their personal preference, as measured by the EPPS.

Table 26. Comparison of Pre and Post-Curricular EPPS Scores: U.P. Seniors, 1972 (N = 17)

Scales	Pre-Curricular Mean	Post-Curricular Mean	Univariate F	P Less Than
Ach	46.06	51.88	11.6108	.0037
Def	46.53	45.71	0.1281	.7252
Ord	48.29	49.00	0.0712	.7931
Exh	50.00	46.29	2.3267	.1467
Aut	49.88	57.94	7.1607	.0166
Aff	54.94	47.41	9.9728	.0061
Int	53.41	49.35	1.8479	.1929
Suc	52.65	49.76	1.8257	.1955
Dom	42.82	44.82	1.0187	.3279
Aba	53.41	46.47	10.4261	.0053
Nur	59.82	53.35	5.0835	.0386
Chg	47.59	55.35	13.2565	.0023
End	48.29	48.41	0.0056	.9414
Het	49.88	54.18	1.8579	.1918
Agg	46.65	48.47	1.2624	.2778
Con	49.41	47.82	0.4725	.5017

Multivariate F-Ratio for Equality of Mean Vectors
$F_{16,1} = 1.9265$ P less than .5184

Summary of Hypothesis 5.2

The Classes of 1972 at U.S.F. and U.P. were compared on a pre/post-curricular test basis, using the OPI, the LAE, and the EPPS. The investigators expected both groups to show measured change on the three variables and in about equal amounts during the three-year interval between sophomore year and graduation. The statistical results showed that the hypothesis is accepted for the U.S.F. students, who did, in fact, show changes on eight scales of

the OPI, three of the LAE, and seven of the EPPS. The hypothesis is rejected for the U.P. students who did not change in personality characteristics, as measured by the OPI; in leadership ability, as measured by the LAE; or in personal preference, as measured by the EPPS. The lack of significance may be a function of sample size since many of the scales on the OPI and the EPPS have small probabilities.

Upon entry to the university, the U.S.F. Class of 1972 has been found to be similar to other beginning groups of nursing students at U.S.F., and, upon graduation, has been found to be similar to other U.S.F. seniors on completion of the program. Change has been demonstrated in the U.S.F. Class of 1972 between freshman and senior years. Therefore, the investigators rationally deduce that the changes in the U.S.F. Class of 1972 might be the result of the impact of the integrated curriculum. The remaining three hypotheses focus on an assessment of those curriculum experiences and students' perceptions and evaluation of them.

CHAPTER 4

Q-TECHNIQUE AND CLUSTER ANALYSIS

From this point in the analysis of the quantitative data, hypotheses 6, 7, and 8 depend on an understanding of Q-technique and cluster analysis. This chapter explains what Q-technique is, how the CEQ was developed, and what is meant by cluster analysis.

Q-Technique

Q-technique involves the forced choice sorting of a series of statements, each printed on a small card, into levels or hierarchies which express the subjects' priorities or preferences. The investigators selected the Q-sort as the primary tool for obtaining students' perceptions of the impact of the curriculum for two reasons: 1) evaluation of diversity of perception, as stated by Cronbach, and 2) objectivity, as noted by Block.

> The inception of the Q-sort technique brought with it the means of testing the diversity between people, and the extent of agreement between them regarding a certain problem. The Q-sort is mid-way between the personal and probable bias of the interview and the academic diagnostic tests which measure the Ss [subjects] on various scales.[1]
>
> . . . [the Q-sort] provides a convenient means of objectifying the impressions and personality formulations of observers. By so doing, of course, the extent of agreement among people in the way in which

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[1]Lee J. Cronbach, "Correlations between Persons as a Research Tool," in Psychotherapy, Theory, and Research, ed. by O. Hobart Mowrer (New York: The Ronald Press Company, 1953), p. 377.

concepts are employed can be assessed.[1]

In addition to the reasons cited by Cronbach and Block, the Q-technique appealed to the research staff because several of them had used it successfully in other investigations of students' perceptions of training programs.[2]

As explained in Part I, Chapter 3, the seventy-two item Q-sort was developed by the investigators on the basis of the stated philosophy of the U.S.F. program and its curriculum objectives as implemented by the faculty. It contains the following six characteristics:

1) The items are impersonal, objective, factual statements about the nursing program--its educational objectives, its rationale, and some prominent features of the teaching-learning process it attempts to implement and facilitate.

2) The items are written as simple declarative sentences in a single, uniform pattern, using a somewhat artificial syntax and grammar to clarify logical relationships among sentence elements and to point up the desired rhetorical emphases upon the referents of these

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[1]Jack Block, The Q-Sort Method in Personality Assessment and Psychiatric Research (Springfield, Illinois: Charles C. Thomas, 1961), p. 4.

[2]Jerry D. McCarn, "Inservice Teacher Training: An Evaluation" (unpublished Ph.D. dissertation, University of California, Berkeley, 1969); Norman E. Melick, "An Analysis and Evaluation of Business Education as an Academic Subject Matter Area under the Fisher Bill in the State of California" (unpublished Ph.D. dissertation, University of California, Berkeley, 1969); Raymond James Roberts, Jr., "Summer Institutes for Teachers of Disadvantaged Youth: A Study of Retrospective Appraisals by Participants" (unpublished Ph.D. dissertation, University of California, Berkeley, 1970); James C. Stone, Teachers for the Disadvantaged (San Francisco: Jossey-Bass Inc., 1969); James C. Stone and William J. Schwarz, "The Teaching of Sex Education: An Assessment of Inservice Training" (Berkeley, California: The University of California School of Education, Division of Higher Education) (mimeographed); James C. Stone, "Intern Teachers and Student Teachers at the University of California, Berkeley" (Berkeley, California: The University of California School of Education, Division of Higher Education) (mimeographed).

elements. The term "student" is included in almost every statement as the direct or indirect object of the predicate or of a closely linked preposition.

3) The items constitute a stratified, representative sample of the almost infinite number of perceptions that students might have regarding the program. The strata of the sample are four categories of program features over which the nursing faculty has at least some control and which it can modify in response to students' perceptions and comments if it so desires. The four categories are: a) Curriculum: Learning Objectives, Opportunities, and Experiences, b) Program: Planning, Scheduling, and Evaluation, c) Instruction: Teaching Styles, Methods, and Procedures, and d) Interpersonal Relations: Teacher-Student Roles and Relationships.

4) The items are all generally characteristic statements of program features. They have been selected and written to be sorted into seven piles representing as many points on the rank-order continuum from "least to most accurately descriptive or generally characteristic," with a mid-point and corresponding pile for statements which are "more or less accurately descriptive or generally characteristic but too difficult to judge."

5) The items have been selected and written to be sorted twice by each respondent on each occasion: first, to represent the respondent's testimony that "these are the facts about the program as I actually perceive them," and second, to represent her critical judgment that "these are what I think the features of the program

should be." That is, the respondent first rank-orders the statements as more or less accurately descriptive or generally characteristic of the program as it actually is, and then rank-orders them as more or less important (to her) characterizations of the program as she thinks it should be.

The double Q-sort at one sitting, first in terms of the curriculum as it is, then in terms of how it should be, is a unique feature of this study. The origin of the idea came from an article by Whiting,[1] which the investigators reviewed early in the research planning stage. In discussing possible uses of Q-technique as a measure of change, he offered as an example, among a number of possible uses, the notion of a double Q-sort. The original decision had been to have the students each year perform the Q-sort in the early Fall and again in late Spring. The plan was amended to administer the double Q-sort at one sitting each year in the Spring. Thus, students were asked to perform the Q-sort first in terms of "the way it is" and immediately thereafter in terms of "the way they'd like it to be." The data then were subjected to cluster analysis. The three research hypotheses dependent on the Q-technique are discussed in Chapters 5, 6, and 8.

Cluster Analysis

Students' scores on the individual items of the Descriptive and Prescriptive CEQ's were submitted to cluster analysis to determine the patterns and generality of their responses. Cluster analysis is the general logic by which variables (in this study, Q-sort items) are grouped together, empirically and objectively, on the basis of their similarities and differences.

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[1]Frank J. Whiting, "Q-Sort: A Technique for Evaluation Perceptions of Interpersonal Relationships," Nursing Research, IV (October, 1955), 70-73.

Variables that form similarly patterned groups, or composites, are termed "collinear clusters." The general logic of cluster analysis has been formulated as a set of procedures in the BC TRY System of computer programs, which was used to find collinear clusters of variables in the Q-sort data.[1]

The degree of generality among the students' responses to each of the seventy-two items on the CEQ is revealed by the extent to which individual differences in their responses to any one item correlate with differences in their responses to the other seventy-two items. The levels of generality are based on the size of the N. Of the seventy-two "differences," the clusters tell us which are "general." A low level generality is based on an N which represents one class (N of 93). A high level generality would represent all classes at all levels (N of 1000). At each level of generality, the differences on the seventy-two items are reduced to the common (not unique) differences shown by three, four, or more clusters. Some differences will persist through all levels of generality, thus being the most "general differences," hence, the greatest similarities. Some perceptions of and prescriptions for the curriculum are phenomena which are general to only one class at one level; for example, sophomores of the Class of 1972. Some perceptions of and prescriptions for the curriculum are general to all classes at one level who had the same point of view; for example, sophomores of the Classes of 1971-1974. Some perspectives are general to all students who ever passed through the U.S.F. program; for example, sophomore, junior, and senior students of the Classes of 1969-1972.

By comparing the students' responses to each item with their responses

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[1]Robert C. Tryon and Daniel E. Bailey, Cluster Analysis (New York: McGraw-Hill Book Company, 1970), pp. 1-5.